APPENDIX E: INVENTORY

The following industrial structures are of architectural, engineering, or historic significance, either in themselves, by association, or as representative examples of a common architectural or engineering type. This inventory omits structures of engineering significance not directly associated with the city's industrial development.

The name of each building derives from the company responsible for the earliest structure or structures. Later corporate owners of significance are mentioned in the text of the entry.

Entries are listed alphabetically by street and then in numerical order by address. Some buildings without street numbers have been assigned numbers for the purpose of this survey; such numbers appear in brackets in this inventory.

**** Listed in the National Register**
*** Proposed for nomination to the National Register**

ABBOTT PARK PLACE

10 Waite-Thresher Company Building (1911): Dwight Seabury, architect. Built by the Waite-Thresher Company, this handsome, 5-story brick building has a flat roof, a simple lip cornice, and horizontal block massing. The pier-and-spandrel wall system is fenestrated with paired, double-hung sash windows which, on the upper stories, are capped with segmental arches. The first story has been altered by the addition of mid-20th-century storefronts.

The company was founded by William H. Waite to produce gold jewelry and was incorporated in 1899 as the Waite-Thresher Company when Henry G. Thresher became a partner. The firm was then located at 61 Peck Street and employed 200 workers. Having outgrown its rented space by 1910, the Waite-Thresher Company built a new factory, but like many jewelry companies which constructed large factories in the jewelry district, the Waite-Thresher Company occupied only part of its new building, renting the remaining space to a printing company, an emblem manufacturer, and two other jewelry companies. In 1935 the Waite-Thresher Company dissolved and sold the building to the newly formed Waite-Thresher Real Estate Company. The building is now used by a mixture of commercial and industrial firms including an employment service, a printing company, jewelry companies, and the Waite-Thresher Real Estate Company.

ACORN STREET

23 Nicholson File Company (1864 and later): William Nicholson, founder of the Nicholson File Company, began his career as a machinist in 1852 in Joseph Brown's machine shop (later Brown & Sharpe). Having opened his own machine shop in the late 1850s, Nicholson formed the firm of Nicholson & Brownell at the beginning of the Civil War to produce parts for Springfield Muskets. In 1864, Nicholson sold his share in Nicholson & Brownell and formed the Nicholson File Company to manufacture files which were cut, forged, and ground by machinery designed and built by Nicholson himself. When Nicholson's company began production it was the first successful manufacturer of machine-made files in America.

The Nicholson File Company complex, designed by William Nicholson, is a mixture of late 19th- and early 20th-century, land 2-story, brick, gable-roofed, mill buildings. Built between 1875 and 1882, the 2-story brick office—with a mansard roof, corbeled cornice, and grouped windows with granite sills and lintels—is the most distinctive structure in the complex.

While Nicholson's goal was to produce three hundred files per day, his company grew so rapidly that by 1867 the works were producing 3,600 files per day. In the 1870s, the company broadened its line of files and rasps. This decade also marked William Nicholson's treatise on the proper use of files which was published in 1878 and which was reprinted several times in the late 19th and 20th centuries. By the 1880s Nicholson had already claimed twenty-eight patents, and the drafting room and machine shop were still being used for the invention of more specialized machines. The company then employed 400 workers.

The 1890s and the early 20th century marked the greatest growth for the Nicholson File Company. Not only was the plant in Providence greatly expanded, but the company also acquired the New American File Company in Pawtucket, as well as four other file manufacturing companies in New Jersey, Indiana, Pennsylvania, and Ohio. The company's six plants produced over 10,000 files and rasps a day. Upon William T. Nicholson's death in 1893, Samuel Nicholson took over the management of his father's thriving company. Under his direction, the Nicholson File Company greatly expanded its export trade. By 1916 the company produced over 7,000 different products ranging from the largest rasps to the finest jeweler's and watchmaker's files with as many as 300 teeth to the inch. Also by 1916 there were machines for every step in the file-making process which included: rolling and cutting strips of steel, clipping, forging with power hammers, grinding with huge revolving stones, drawfiling the blanks, and cutting teeth. The files were then cleaned, inspected, and boxed. In 1959, the Nicholson File Company transferred the Providence manufacturing operation to its plant in Anderson, Indiana, and build a structure in East Providence to house its administrative, sales, and engineering offices. Since then the Acorn Street Complex has been occupied by various small industries.

ADELAIDE AVENUE

333* Gorham Manufacturing Company (1888-1890 and later): Frank Perry Sheldon, architect. The Gorham Manufacturing Company was founded as a small jeweler's shop in 1818 by Jabez Gorham, who made beads, earrings, breast pins, rings, and a gold chain known as the "Gorham Chain." In 1831, the firm began manufacturing silver spoons. Soon the shop began the production of other silver items such as forks, thimbles, combs, and children's cups. In 1841 Gorham's son John joined the firm which became known as Jabez Gorham and Son. After his father's retirement in 1847, John Gorham greatly expanded the business by installing a steam engine and producing flat silver and silver holloware by machine. In 1865, the Gorham Manufacturing Company incorporated. It established a separate department for the manufacture of ecclesiastical articles in 1885. This department was quite successful and the company was soon handling large orders for statues and memorials (mainly made of bronze) and for architectural bronze work. One of the many statues cast at the Gorham Manufacturing plant is the Columbus Monument (1893) at Columbus Square in Elmwood; this bronze figure of Columbus is the replica of a silver statue designed by Auguste Bartholdi and cast at Gorham for the Columbian Exposition of 1892 in Chicago.

The complex, which includes one of the largest metal working foundries in the world, consists of a group of 2- and 3-story, brick structures with low hip or pitched roofs, grouped for the most part symmetrically beside and behind a 3-story (third story added later), hip-roofed office building with a gabled, Romanesque-style, central entrance. All the structures possess uniform corbeled brick cornices and window sills and other trimmings of rock-faced granite. A large, bronze statue of Vulcan, cast at the plant, stands in front of the office building. A short distance to the north of the principal complex is a brick, cross-gabled stable and carriage house erected in 1890 which originally was part of a now demolished station. Also in this area is a long, Colonial Revival building built in 1895 and enlarged in 1906 containing the Board of Director's room, dining rooms, recreation rooms, and dormitories. This building was to be used by the workers as well as the executives. Located next to the Amtrak Railroad, the Gorham Manufacturing Company complex presents a handsome, picturesque facade to the railroad traveler from New York to Providence or Boston. In 1967 Gorham became a division of Textron. The plant is still in operation today.

ADMIRAL STREET

1 Oriental Mills (c. 1861): In 1860 Alfred A. Reed bought the land then in North Providence at Admiral and Whipple Streets. The Oriental Mill, probably completed in 1861, was built as a cotton mill. Though possibly dormant during part of the Civil War, the Oriental Mills Manufacturing Company was operated for thirty years by the Reed family-first Alfred Reed and later his son Alfred Reed, Jr. The company did not greatly expand during that thirty-year period.

The mill building, though originally surrounded by smaller secondary buildings, is the only surviving structure from this period of construction. This long, 3-story, brick structure has a low gable roof and stair towers in the center of the east and west sides of the mill; the tower on the west side or Oriental Street side retains its original bracketed helm roof above the belfry. The regularly spaced windows, the oculus windows in the gable ends, as well as the severe modillion raking and eaves cornices are characteristic features of the period.

In 1893 the Oriental Mills were sold to the J. P. Cambell Company. Cambell, who also operated the Cranston Print Works, replaced most of the old machinery. By 1901 the J. P. Cambell Company was producing 1,500 pieces of white goods a week and employed 250 workers. However, the company was one of many businesses bankrupted by the panic of 1907; Cambell was forced to liquidate its Providence property, and in 1908 the Oriental Mills were sold at auction to Alfred Lowenstein, a Boston silk manufacturer. Lowenstein soon formed the American Silk Spinning Company which functioned solely as a silk-spinning plant until 1928. As early as the 1930s this company began experimenting with synthetics. Because they were one of the earliest textile plants to explore and expand into the synthetic market, the American Silk Spinning Company remained in business at the Oriental Mill until 1962, at least ten years after most textile plants had closed in Providence. Since 1962 the Oriental Mill has been occupied by the Union Paper Company and the Union Transbag Company.

ALLENS AVENUE

31 Providence Machine Company (1846, c. 1850): Thomas Hill, founder of the Providence Machine Company, played an important part in the development of the textile industry in Rhode Island. Hill gained his machine-making experience as an apprentice in Gay's mill in Pawtucket. In 1830 he came to Providence to manage the machine shop in Samuel Slater's Providence Steam Cotton Manufacturing Company. Four years later he became a partner with Slater in the newly formed Providence Machine Company. Upon Slater's death in 1835, Hill took over the machine shop and by 1845, under Hill's leadership, the business had expanded so considerably that a new factory became necessary. Completed in 1846, the factory is a large, 3-story, gable-roofed structure which originally had four corner turrets (only one of which still remains, though it has been greatly altered). This structure also had a rectangular, 3-tier cupola with a crenellated parapet which has been removed. The other remaining structure built in the 1850s is a smaller, L-shaped, gable-roofed structure with regularly spaced sash windows and granite lintels.

The Providence Machine Company was the first American Company which successfully manufactured roving machines and fly frames for cotton manufacturers. Before this company existed, cotton-cloth manufacturers were largely dependent on England for these specialized machines. By 1866 when the company incorporated, it had also begun the manufacture of worsted machinery. Upon Thomas Hill's death in 1894, his grandson, William Pierce, became president, and it was under Pierce's leadership that the Providence Machine Company's "improved patent roving machine" was introduced in 1899. By 1901 these machines were the main product of the Providence Machine Company. In 1910 the company was bought by the Whitin Machine Company of Whitinsville, Massachusetts, and after a few years all of the patterns and machinery were moved to Whitinsville. Between 1917 and 1920 the Gorham Manufacturing Company owned the plant and during World War I manufactured shell cases for the navy.

The Franklin Process Company next owned and occupied the plant. This large, dyeing-machine manufacturer and dyeing company has its main plant in Philadelphia with a branch in Manchester, England, as well as one in Providence. A 1925 advertisement for the company claims that the Franklin Machine Company was the largest job dyer in the country. After the company sold the plant in 1957 the complex remained vacant for several years. It is now largely occupied by the State Office and Supply Company.

ALEPPO STREET

50* Riverside Mills (1863, 1865, and later): This large complex of 1- 2- 3- and 4-story brick, flat- and gable-roofed mill buildings was founded as a woolen mill by George C. Chapin and Lewis Downes in 1863. An 1865 fire destroyed the carding room, spinning room, and finishing room which were immediately rebuilt. Some of the early 2-story buildings designed by Lewis Downes, working with architect Clifton Hall, have handsome pier-and-panel walls and elaborate, brick, corbeled cornices. Most of the buildings, which date from the late nineteenth and early twentieth century, are plainer, flat roofed, brick structures.

Chapin and Downes originally began by manufacturing woolen, coffin coverings and cassimeres but soon changed their product to astrakhan (a cloth made of wool or wool and cotton, which has a curled or looped pile) and other ladies' cloakings. Although the Riverside Mills gained their reputation from their astrakhan, since it was a cloth not widely manufactured in the United States, Chapin and Downes invested most of their energy into the manufacture of worsted cloth for men's wear. According to one source at the turn-of-the century, Riverside Mills was the first worsted plant in the United States to use the Bolette card feeder and the teasel cross jig. The mills were also innovative in using English-made, self-operating mules and in employing a cold-air wool-drying process. In 1872 Louis Downes sold his shares in the mills. A year later in the panic of 1873 the Riverside mills declared bankruptcy and the property was sold at auction. The new owner, E. P. Chapin, incorporated the mills under the name of the Riverside Worsted mills.

The 1880s and 1890s were a period of expansion and changes for the Riverside Mills. In 1889 when the Riverside Worsted mills merged with the Oswego Falls Manufacturing Company, the worsted complex, under the new name of the Riverside and Oswego Mills, employed 2,700 workers. The business again changed hands in 1891. Finally in 1899 the Riverside Mills were bought by the American Woolen Company, a huge textile company which acquired several other mills in or near Olneyville. Under the ownership of the American Woolen Company, the Riverside Mills continued to manufacture worsted cloth for men's wear. By 1908 the Riverside Mills covered seven acres with approximately eleven mill buildings (most of which were connected) and a 3-story, brick, early 20th-century office on Aleppo Street.

In 1927 the Riverside Mills, with a reduced work force of 1800, was closed by the American Woolen Company; the company was re-opened a year later when the American Woolen Company abandoned its Weybosset and Valley Mills and transferred some of the machinery and workers from the abandoned plants to the Riverside plant. In 1937 the American Woolen Company in liquidating most of its New England mills sold the Riverside Mills to a realty company. One of the first businesses to occupy the Riverside Mills after it was sold was the Providence Warehouse Company, which still occupies part of the complex. Other parts of the mills were rented to various manufacturing companies. At one point there were thirty-three companies in the numerous buildings of the Riverside Mills.

BARK STREET

1 Stillman White Brass Foundry (c.1871 and later):** Stillman White started his brass foundry on this site in 1856. By 1869 White's brass foundry was famous not only in Rhode Island but also in New England for the product called "S. Whites Anti-friction Lining Metal" which was used to line bearings. Stillman White's Brass Foundry was also known for a variety of brass, bronze, and composition castings, which were used by steam-engine companies, cotton-machinery manufacturers, and other industries.

Although Stillman White built his foundry on this site as early as 1856, the original frame structure was replaced by the three structures now on the site in the late 19th and early 20th centuries. At the north end of the site is a 1-story, brick structure with a gable roof and a corbeled cornice. This building, which contained the foundry proper, is identified by its tapering square chimney and four, large, wind-adjustable sheet-metal vents mounted on the roof. The 2-story structure in the middle has a gable roof and similar window treatment and corbeling. The southern section, built in the early 20th century, has a flat roof and similar, long, rectangular windows and corbeling. The 2-story sections were used for office, storage, and work space. Although the foundry was built in three separate stages, the combined 1- and 2-story structures with uniform brickwork, window treatment, and corbeled cornice presents a unified appearance. The Stillman White Company occupied the structure until 1949 when it moved to a modern foundry. During the 1950s and 1960s the building was occupied by various businesses, but had been abandoned by the early 1970s.

In 1973 after a fire had damaged the building, the Stillman White Foundry was included in the Moshassuck Square Historic District listed in the National Register of Historic Places. Still threatened by demolition, however, the foundry was bought and adapted for re-use as office space by the Research and Development Institute (REDE). REDE subsequently occupied the structure until the mid-1970s. The Stillman White Foundry is now occupied by an architectural firm and other offices.

BRANCH AVENUE

725 Wanskuck Mill (1864 and later): The Wanskuck Company established by Jesse Metcalf and Henry Steere in1862 was one of the many woolen mills formed early in the Civil War when cotton was scarce and army uniforms and blankets as well as civilian clothing were in great demand. Steere and Metcalf bought the land and water privileges of a small abandoned cotton mill on Branch Avenue. Complete in 1864, the main building of the Wanskuck Mill is a very large, 5-story, brick, flat-roofed mill (fifth story added and original gable roof replaced with a flat roof in the 1880s or 1890s) with a projecting square central tower that tapers to an octagonal lantern capped with a low, copper, ogee dome. The machinery of the main mill was powered by a 200-horsepower Corliss engine. Built at the same time and still standing are several smaller buildings including a brick gasometer with a rubble stone foundation, a small structure which contained carpenter and machine shops, and other small buildings. The brick office built at this time was later supplanted by a brick, 2-story, Romanesque office. Across Branch Avenue the Wanskuck Company built two long blocks of workers', brick, row houses on Vicksberg Street and a boarding house on Winchester Street Two years later the company donated land for the Roger Williams Baptist Church (1866) on Woodward Road.

In 1864 the company shipped its first case of woolen goods to New York, and by 1865 the Wanskuck Company employed 350 workers who produced 261,613 yards of woolen goods yearly. In 1869 the Wanskuck Company began manufacturing worsted cloth used for men's suits, and on January 12, 1870, the Company reputedly shipped (to New York) the first case of men's worsted suit material made in this country. By 1874 worsted production had grown so rapidly that a new mill was built for the production of worsted cloth. This 4-story brick structure to the west of the main building also contained the power plant and dyehouse. In 1884 the Steere Mill (see Wild Street) was opened under the direction of Henry Steere. This mill, associated with the Wanskuck Company, produced worsted yarn. Between 1897 and 1898 the Wanskuck Company acquired the Geneva Mills (see Douglas Avenue) in Providence and the Mohegan and Oakland Mills in Burrillville. The Wanskuck, Steere, and Geneva Mills have interconnected waterpower systems, large parts of which still survive. By the turn-of-the-century the Wanskuck Company had built numerous additions to their mill properties. In addition Wanskuck Hall (c. 1880) on Branch Avenue was built by the company for use by mill employees for social gatherings. In the early twentieth century the company built several houses for overseers and management on Woodward Road.

The Wanskuck Company maintained its level of production into the 1920s, 1930s, and 1940s. In 1930 the various mills of the company produced 1,300,600 yards of worsted goods. By the 1950s, however, the worsted market had declined so greatly that most remaining worsted companies either reinvested in other kinds of firms or moved south where textile production was cheaper because of lower-paid workers and less expensive energy sources. The Metcalfs sold all of their stock in the Wanskuck Company which subsequently was reorganized as the Wanskuck Corporation. The Wanskuck Corporation sold its textile mills and invested in the New England Butt Company, a braiding-machine manufacturer. Several small companies now occupy the Wanskuck Mill complex.

CARPENTER STREET

299 Grant Mill (c. 1910): Built around an earlier stone mill structure, this plain, 4-story, brick mill with a flat roof and segmental-arch windows was one of the two Providence mills owned by the huge cotton combine of B. B. and R. Knight, best known for its Fruit of the Loom products. Another plant, the Nottingham Mill (originally the Providence Steam Cotton Mill) on Dyer Street, owned by the Knights in the early 20th century, has been demolished. The Knight brothers, Benjamin and Robert, began the manufacture of cotton cloth in 1852 and in 1856 adopted their Fruit of the Loom symbol which was later accompanied by a guarantee of satisfaction. By the early 20th century the B. B. & R. Knight Company owned twenty two cotton mills in Rhode Island and Massachusetts. After the death of the Knight brothers in the early 20th century, the textile combine was run by their sons until 1920 when a New York corporation bought the Knight holdings. This corporation manufactured cotton goods under the Fruit of the Loom label until 1926 when it filed for bankruptcy; the mills were subsequently managed by the Knight Finance Corporation. In 1935 the Grant Mill was sold to the Blacher Brothers jewelry company which still occupies the mill.

CHARLES STREET

47 The Fletcher Manufacturing Company (1869):** The Fletcher Manufacturing Company, founded by Thomas Fletcher in 1793 for the production of narrow fabrics such as lampwicks, was originally located in Boston. Fletcher moved his company to Providence in 1808, and in 1844 Fletcher's sons, who then ran the business, built a mill, the first structure of the Charles Street factory complex. While Thomas Fletcher had produced lampwicks and other narrow fabrics, his sons expanded the operation to include the manufacture of boot and shoelaces, corset laces, twine, yarns, spindle bandings, and kerosene-lamp wicks. In 1865 the Fletcher brothers incorporated their rapidly growing company as the Fletcher Manufacturing Company. By 1890 the textile factory complex covered over four acres and employed 750 workers. The company remained at this site until the early 20th century when the International Braid Company bought the Fletcher plant as well as the Elmwood Mills (see Daboll Street) for the production of shoe and corset laces. In the 1950s, when most textile companies were liquidating their New England properties and were moving south for cheaper labor, transportation and energy costs, the International Braid Company sold the large complex. Damaged by fire in the early 1970s, the Fletcher Manufacturing Company complex was demolished except for the office and warehouse.

Built in 1869, the imposing 3 1/2-story office with brownstone trim, a mansard roof, and bracketed dormers, still retains the name of the company which is displayed in projected lettering on a brownstone cartouche above the entrance. Built at the same time and attached to the office is a 3-story brick building which, though less ornate than the office building, is nevertheless a handsome addition. The office and warehouse did not reflect the style of the mill buildings in the complex, which were 2- 3- and 4-story, brick, gable-roofed structures, one of which had a handsome exterior stair tower. In 1973 along with the other remaining industrial buildings in the Randall Square area (see 1 Bark Street and Hewes Street), the Fletcher Building was placed on the National Register of Historic Places and recently has been rehabilitated as an office building.

387 Silver Spring Bleaching & Dyeing Company (1864 and later): The Silver Spring Bleaching and Dyeing Company was formed in 1864 when Henry Lippitt and Charles Merriman bought the buildings, land, and water rights to Frieze and Dow's bleachery on the west side of Charles Street (then part of North Providence). Frieze and Dow had gained a reputation for the extraordinary whiteness of their bleached goods which was due to the clear water produced by a spring (hence the name Silver Spring) and by the West River which ran through the mill site.

Merriman and Lippitt incorporated as the Silver Spring Bleaching and Dyeing Company and began both remodeling the Frieze and Dow Mill and constructing a new plant across the street. Nothing remains today of the old Frieze and Dow Mill. Merriman retired in 1871 and Lippitt's son Charles entered the business. Six years later the Silver Spring Bleaching and Dyeing Company added cloth printing to their operations. It was about this time that the Silver Spring Company began to have problems getting a supply of clean water from the West River as more mills were built upriver. A dam and two reservoirs were built in the hope that the pollutants would settle to the bottom of the reservoir. Having found that this did not solve the problem, the company later obtained water from driven wells and from the city water supply. By 1897 the Silver Spring Bleaching and Dyeing Company had expanded considerably and employed 575 workers. In 1905, the works were bought by the U.S. Finishing Company, a large textile combine.

The U.S. Finishing Company, which also owned the Queen Dyeing Company (see 325 Valley Street) and the Dunnel Manufacturing Company in Pawtucket as well as five other finishing and dyeing plants in other parts of the country, operated the plant until 1939 when the combine, apparently consolidating its holdings, sold the property.

The large complex is now occupied by several stores, offices, and small industries and appears today much as it did when the U.S. Finishing Company bought the plant. Many of the original 1864 structures remain, although almost all of them have been altered or added to. The mills are 1- 2- and 3-story, brick, flat-roofed or slightly-pitched-roofed structures-some with clerestory monitors and corbeled cornices. The office (c. 1890), located at the southern end of the complex, is a 2-story, brick, flat-roofed structure with segmental-arch windows and a corbeled cornice which is hidden behind a band of modern siding. A small 19th-century engine house is at the northeast end of the plant, adjacent to a large early 20th-century boiler house with huge roundhead windows and buttressed walls. Behind the boiler house is a tall brick chimney with the names of both the U.S. Finishing Company and the Silver Spring Company painted on it. The ornamental brick work at the top of the chimney can be seen from the street.

CHESTNUT STREET

95* Irons & Russell Company (1903-1904): Martin and Hall, architects. The Irons and Russell Company began as the Charles F. Irons Company in 1861 for the manufacture of society emblems, pins, and charms. In 1886 Charles E. Russell, who had learned the jewelry business while in the employ of Irons, opened his own company in the third and fourth floors of the Sackett Building (no longer standing) on Friendship Street which Irons also occupied. The Charles E. Russell Company also specialized in society emblems, trade emblems, rolled gold-plate pins, and chains. Russell employed about twenty-six people. Finally, in 1893, Irons and Russell joined their separate businesses to form the Irons & Russell Company. By 1901 they employed seventy-five workers. In 1903 having outgrown the Sackett Building, Irons & Russell commissioned a new building to be erected at 95 Chestnut Street (the site of the old Federal-style mansion which had last been occupied by the Home for Aged Men, now on Broad Street). The Irons & Russell building, which was intended to house other light-manufacturing interests as well, is a 6-story, brick, industrial building with a flat roof, a corbeled cornice, and segmentally arched windows which are separated by narrow brick piers.

The building was noted at the time of its construction for its use of all electric power which eliminated much of the need for belting and shafting, making the work area lighter and clearer. The building was also equipped with a steam boiler, a Westinghouse engine, and electric-generating and controlling equipment. It was heated with the e housed a couple of other firms, was filled in 1917 by four other jewelry manufacturers and by a company that specialized in engine turning. The Irons & Russell Company occupied this structure until 1956, when it sold the building to Carl-Art, Inc., a jewelry-manufacturing company and long-time occupant of the Irons & Russell Building. Owned by Carl-Art until 1969, the structure still retains several jewelry manufacturing tenants. Leo's Cafe also occupies this building.

116* Champlin Manufacturing Company (1888), 1901: The S. B. Champlin Company was founded by Stanton B. Champlin and his son, George, in 1872 to manufacture gold rings and gold-filled chain. In 1894, George Champlin bought and incorporated the E. M. Dart Company and in 1895, when his father died, incorporated the S. B. Champlin Company. The Champlin family maintained control over both companies for over eighty years; in the mid-20th century both companies were managed by George B. Champlin's son, George S., who is still associated with the Dart Union Company Inc., the successor to the E. M. Dart Manufacturing Company.

Having outgrown its quarters on Eddy and Elm Street, the S. B. Champlin Company built a new factory to the west of the existing jewelry district in what was then a largely residential area. Now in the center of the jewelry district, the Champlin Building is a 5-story, brick structure with segmental-arch windows and a corbeled cornice. The southern half of the structure was added in 1901.

Like most large factories built in the jewelry district, the Champlin building housed other manufacturing companies. Among these, the E. M. Dart Company, the Edwin Lowe Company, and the Hedison Manufacturing Company are the most notable. The E. M. Dart Company was formed by the mechanically gifted Edward M. Dart in 1865. In spite of numerous inventions in the field of gas, water, and oil pipe fittings and pumps, valves and regulators. Dart's company remained small and obscure until 1894 when Champlin and other investors incorporated the company, patented Dart's inventions, expanded the company, and moved the operation to the Champlin Building. In 1917 the E. M. Dart Company moved from the Champlin Building to its new factory at 134 Thurbers Avenue, which it still occupies. The Edwin Lowe Company which occupied the Champlin Building from 1900 to 1930 was a small plating company. Edwin Lowe, the son of Thomas Lowe who introduced an innovative gold-plating process invented in Birmingham, England, to Providence in 1842, carried on his father's plating business until 1930, when the company ceased operations. The Hedison Manufacturing Company; jewelry manufacturers, occupied the factory from 1925 until 1977 and owned the building from 1917 to 1978. The S. B. Champlin & Sons Company (successor to the S. B. Champlin Company) occupied the Hedison building until the mid-1970s.

The Champlin Building, now known as the Hedison Building, was converted to condominium lofts in 1978 and retains a mixed commercial and residential use.

150 James Doran and Sons (1907): James Doran and Sons began as a North Attleboro firm, Doran and Hall, in 1885. In 1902, James Doran and his son James, Jr., formed a new findings business in Providence under the name of Doran and Doran, which a few years later changed to James Doran and Sons when Doran's other son, Arthur, joined the firm.

Having outgrown its rented quarters by 1907, James Doran and Sons built a large factory on Chestnut Street. The Doran Building is a 7-story, brick structure with heavy timber framing, brick walls, segmental-arch windows, and a corbeled cornice. James Doran and Sons, like other jewelry companies which invested in large multi-storied factories in the jewelry district, occupied only one floor of the factory and rented the rest of the space to other jewelry manufacturers. The second Doran Building (the Doran Spiedel Building at 70 Ship Street) was used entirely as jewelry-manufacturing rental units. James Doran and Sons owned and occupied one floor of the original Doran building until 1957. Since then the structure has housed jewelry-manufacturing rental units under the owner ship of various investment and real-estate companies. The Doran Building was recently subdivided into condominiums for light industrial and commercial use.

CLIFFORD STREET

162* A. T. Wall Company (1908): The A. T. Wall Company was founded in 1888 by Ashbel T. Wall to manufacture gold plated wire. By 1901 the A. T. Wall Company, located in the Manufacturers Building (a large jewelry-manufacturing building formerly at Sabin Street), employed sixty workers. Having outgrown its rented quarters by 1908, the company commissioned the Bowerman firm of Boston to design a new factory. The A. T. Wall Building at the western edge of the jewelry district is the earliest known Rhode Island example of mushroom-column, flat-slab, reinforced-concr exterior walls; pier-and-spandrel treatment; and large, glass, curtain walls has 30-inch octagonal columns with utility holes floor to floor. Reinforcing rods extend from the roof and the north elevation to facilitate building enlargement. The A. T. Wall Company continued the manufacture of gold-plated wire and rolled gold plate into the mid-20th century. In 1941 when Ashbel T. Wall died, his son Ashbel T. Wall, Jr., who had been charge of the business. In the early 1970s the A. T. Wall Company moved to Warwick.

Like most jewelry companies which built large factories in the jewelry district, the A. T. Wall Company rented space to other jewelry companies. Among the first tenants was the Clark & Coombs Manufacturing Company.

This company, which was established in 1862, had built a national reputation for manufacturing gold rings by the early twentieth century; by mid-century, however, production had dropped sharply due to antiquated machinery and inefficient management practices. In 1946 the business reorganized, and under the management of a new president and veteran jewelry manufacturer, Vita Carneglia, Clark & Coombs increased production by 100 per cent within a seven-year period. The company further expanded with the purchase of jewelry tools and dies from the Ostby & Barton Company, which, upon leaving its Richmond Street factory for a new Warwick factory, continued only its precision-tool production. The Clark & Coombs Company still occupies this structure as does the Clark & Coombs Realty Company, the current owners of this structure. The Van Dell Corporation, jewelry manufacturers, are also current occupants of this structure.

DABOLL STREET

222 Elmwood Cotton Mills (1866, and later): One of Elmwood's largest industrial plants, the Elmwood Mills complex contains several 2- and 4-story stone-and brick structures with low-pitched or flat roofs. The two stone buildings were erected in 1866 as the Elmwood Cotton Mills by the James Y. Smith Manufacturing Company which manufactured cotton cloths, prints, sheetings, and fancy goods. The company's best known product, called "Elmwood Shirting," was a fancy grade cotton cloth which gave the company a reputation for producing high-quality goods. James Y. Smith, the governor of Rhode Island from 1863 to 1866, and his brother, Amos D. Smith, were the developers of the large 1847 Locust Grove subdivision which included this complex. In 1891 the business, which was then run by F. H. Potter, produced 450,000 yards of cotton goods a year.

In 1895, the William E. Joslin Company, a shoelace and braid manufacturer, bought the complex and operated the mill until 1900, when it sold the factory to the Elmwood Mills, also a shoelace and braid company. This company was responsible for the construction of early 20th-century brick buildings on either side of the stone buildings. The last structure erected in the complex (at the eastern end of the complex) was built before 1918. The International Braid Company manufactured shoelaces, boot laces, corset laces, and decorative braid at this factory as well as at the Fletcher Manufacturing Company (see 17 Charles Street) from 1912 until 1948. Cable Electric Products, which still remains at this site, bought the Elmwood Mills in 1948.

DEXTER STREET

425 American Standard Watch Case Company (1941, 1945): The American Standard Watch Case Company, founded in 1920 was formerly located on Sprague Street. In 1941 the company built this large, low, 1-story, brick factory with simple modernist detailing around the doorway. An addition to be used as a cafeteria for the company's 800 workers was built in 1945. The American Standard Watch Case Company was bought by the Bulova Watch Company in 1948. Bulova continues to manufacture watch cases at this factory.

DIKE STREET

84 Waterman-Weybosset Mills (1836 and later): John Waterman's Eagle Steam Mill, a cotton mill, was located in two mills on Dike Street on either side of Troy Street. After 1855, however, the mill on the western side of Troy Street (now altered beyond recognition) was operated under separate ownership. John Waterman, who earlier in the century had built the Merino Mills (see Ponagansett Avenue), was one of the earliest Providence cotton-cloth manufacturers to use a steam engine as the sole source of power. In the 1850s Waterman sold the mill to R. and J. Peckham who operated the cotton mill until the outbreak of the Civil War, which constricted the supply of raw cotton. In 1866, Royal C. Taft (later Governor of Rhode Island) and William Weeden bought the abandoned mill and incorporated as the Weybosset Mills. Taft and Weeden who had both been active in the woolen industry sold all of the cotton machinery and converted the Waterman Mill into a woolen mill. The Weybossett Mills soon became well known for its fine cassimeres woven from original designs.

The Weybossett Mills were responsible for all of the 19thcentury additions to the original 3V2-story, stuccoed, stone, Greek Revival mill with a central tower (obscured by a later brick structure). Early 1870s structures include a small brick mill (mill number two) on the northeast corner of Troy and Oak Streets, a large stone ell on the eastern side of the earlier structure, and a small addition to the rear extension of the mill. These structures were used for scouring, picking, and dyeing the wool. The 4-story, stone mill (mill number three) with a projecting central tower, corner quoins, and multi-paned sash windows also dates from this period. This mill was used for auxiliary carding and spinning. Later buildings are a c. 1890 addition to the office and an early 20th-century storehouse on the southeastern corner of Oak and Troy Streets. By the early 1880s with the increasing popularity of worsted goods, the Weybossett Mills sold its carding machinery and installed combing, drawing, and spinning machinery for worsted production. 1n 1885 Royal C. Taft sold his shares in the Weybossett Mills, and in 1899 William Weeden sold out to the American Woolen Company. Under the ownership of the American Woolen Company the Weybosset Mill produced cloth for overcoats and cloaks. The fourth mill, on the southeast corner of Troy and Oak Streets, was built between 1908 and 1918 and was used for storage. In 1928 the American Woolen Company made plans to abandon the Weybosset Mill and finally sold it to a realty company in 1932. The Weybosset Mill has since been occupied by several small manufacturing companies.

DOUGLAS AVENUE

1115-1117* Cowing and Heaton Mill (c. 1850): The Cowing and Heaton Mill, just inside the city line, is the oldest surviving building of the complex known in the late 19th century as the Geneva Mills. The other buildings of the complex are on the North Providence side of the city line. This small, 2-story, stuccoed, stone mill with a flat roof (originally a gable roof) and quoined corners was built by Martin Cowing and Robert Heaton who were both involved in various aspects of the textile industry. They formed the Cowing and Heaton Mill Company which seemed to function as a landlord to and perhaps partial investor in different textile businesses that leased the mill and machinery for a certain period of time. The various companies referred to this lease as the Cowing and Heaton Privilege. The original mill, started as early as the 1830s by Martin Cowing, was used as a cotton-dyeing-and-bleaching establishment until the late 1850s. Among those to use the mills for these purposes were Ellsworth & Cushing and John L. Ross. Hale & Burroughs began operating the mill in 1860 to produce woolen goods. It was apparently at this time that the mills became known as the Geneva Mills. An 1861 fire destroyed most of the complex which was subsequently rebuilt. Owners in the 1860s and 1870s were F. B. and E. A. Smith and the Owen Brothers (who were later proprietors of the Atlantic Mills; see 120 Manton Avenue). In 1880 the Cowing & Heaton Privilege was transferred to the Geneva Worsted Company, owned by Sack and Ullman, and in 1896 the Geneva Mills were bought by the Wanskuck Company (see 725 Branch Avenue). This large, worsted manufacturer remodeled the mills with the exception of this small stone mill which remains intact. The Wanskuck Company cold its textile mills in the 1950s. Today the Geneva Mills are occupied by Fintex Industries, Inc.

DRYDEN LANE

27 Allen Printworks (1830 and later): The Allen Printworks, more than any other printing establishment in Providence, was a vital force in the textile and cloth-printing industry. Founded in 1830 by Phillip Allen - an engineer, inventor, and governor and state senator - the Phillip Allen & Sons Company originally printed cloth by hand with carved blocks, but as early as 1835 Allen introduced printing machines to his establishment which greatly increased the speed of calico production. By 1846 Phillip Allen & Sons had five printing machines and employed 250 workers who turned out 130,000 yards of calico cloth a week. By 1849 the printworks had one main mill and six ancillary structures surrounding it.

When the panic of 1857 swept the country, however, Phillip Allen & Sons was one of the many firms forced to declare bankruptcy. The printworks, which had tripled in size since 1849, were bought by Phillip Allen's brother Crawford and were reorganized as the Woonsocket Company. Crawford Allen, who had been involved in the printworks and cotton industry in Valley Falls and in Pawtucket, managed the business aspect of the operation, while Zachariah Allen, the middle and most famous Allen brother, managed the plant itself.

Zachariah Allen was well known for his contributions to steam-engine and textile-machine technology. In 1870 Crawford Allen retired from active management, and in 1871 the company was reorganized under the control of Allen's lawyers as the Allen Printworks; at this time Zachariah Allen also retired. When the newly organized printworks failed, however, in 1879, the works were reorganized and put back into operation by the major stockholders of the company. By this time the Allen Printworks had had its greatest period of growth with most of the building having occurred in the 1850s, 1860s, and 1870s under the control of the Allen Brothers. One of the remaining buildings in this sprawling complex is the main mill which is a 3-story brick structure with a 5-story central tower and a jerkinhead-gable roof. The northern part of the mill was rebuilt in 1874 after a fire and incorporated part of an earlier stone mill. The section south of the tower was built in 1871. To the east of the main mill is a small, 2-story, stone and brick structure with a trapdoor-monitor roof. This building is the oldest on the site and may be the original stone structure built by Phillip Allen in 1830. For twenty years after the printworks were taken over by the stockholders, printing operations continued under the name of The Allen Printworks. In 1901, however, the stockholders sold the printworks to the Roger Williams Finishing Company which leased the works to a cloth-printing company. In 1907 all of the printing machinery was sold. The Roger Williams Finishing Company seems to have occupied the plant for a few years in the early 1920s, but by the 1930s the plant was occupied by several smaller businesses. Today the remaining buildings have been converted to commercial and light industrial use.

DUDLEY STREET

8-12 United States Gutta Percha Paint Company (1906): This large, 4-story, brick, pier-and-panel, industrial building with its long, rhythmical facade and widely bracketed cornice, designed by Perry Whipple, is the second site of the United States Gutta Percha Paint Company founded by J. William Rice in 1886 and originally located at Mathewson and West Exchange Streets. Not long after the building was completed a 3-story brick annex for the boiler room was designed by Fontaine and Kennicut. Rice had been active as a paint, chemical, and dye-stuff dealer since 1861. He invented a paint-making process which used Malayan gum-tree resins known as gutta percha. The paint which resulted was an early white latex called "barreled sunlight" that was, according to the company's advertisements, unique in its non-yellowing properties. The U.S. Gutta Percha Paint Company also produced oil-based paints, enamels, and a popular white lead paint called Rice's Crown German White Lead." By 1930 the company had a network of 170 distributors and 7,500 retail dealers as well as a significant export business.

The plant was vacated before 1962 and is now occupied by the CNC Chemical Company which specializes in the manufacture of chemicals for textile- and paper-finishing companies.

EAGLE STREET

45 Valley Worsted Mills (1866 and later): Founded in 1842 by John Giles, the Valley Worsted Mill was one of the earliest worsted mills in the United States. Initially the machinery in this early mill was powered by oxen and the product of the mill, worsted yarn, was used by hand knitters. In 1866 the old Valley Mill was destroyed by a fire and was entirely rebuilt the same year. The main mill, a 3-story structure with a slightly pitched roof and segmental-arch windows, still remains as does a small wooden ell, now covered with simulated brick siding. A second, 2-story, brick, gable-roofed structure was built between 1868 and 1875. The flat-roofed, 2-story structure adjoining the main mill is an early 20th-century addition. The office, situated just south of the mill, has been demolished. By 1868 the newly rebuilt worsted mill turned out 2,000 pounds of worsted yarn a day. In the late 1880s, the Valley Worsted Mill employed 450 workers and had gained a reputation for its varieties of fine worsted yarns which included floss zephyr, knitting worsted, shetland, spanish, saxony, and frosted yarns. By the late 1890s the Valley Worsted Mill was at the height of productivity and had upgraded its equipment with modern machinery. Replacing the 120-horsepower engines were three Greene 250-horsepower engines as well as several upright horizontal boilers. These engines and boilers produced the power for the worsted machinery which turned out 100,000 pounds of worsted yarn a month.

In 1899 the American Woolen Company bought the Valley Worsted Mills (as well as several other worsted mills in or near Olneyville). This huge textile company operated the Valley Mill until 1928 when the company abandoned the mill, by then only partially occupied. Much of the machinery from the Valley Worsted Mill was moved to the Riverside Worsted Mill which, having been closed a year earlier, was scheduled to re-open. The American Woolen Company sold the Valley Mill to a realty company in 1931. For approximately ten years the Valley Mill was rented by other textile companies, but during the 1940s, 1950s, and 1960s the former worsted mill was used by various trucking businesses and jewelry-related firms. Today parts of the Valley Mill are being used by an office furniture company, jewelry companies, and other light industries.

EDDY STREET

342 Narragansett Electric Lighting Company (1913 and later): The first electric company in Providence was the Rhoc produce electricity for seventy-five arc lamps in downtown Providence. By 1888 the city had 236 electric street lights (compared to 2,590 gas and 1,618 naptha or gasoline lights) and various businesses had installed a total of twenty-one electric motors, the largest of which ran the pump for Shepard's hydraulic elevator. One year later the Narragansett Electric Lighting Company bought the Rhode Island Electric Lighting Company (giving it a monopoly on electric-power production in Providence) and completed the construction of a new large plant (to replace its former Aborn Street powerhouse) on Eddy and South Streets. In 1900 the Narragansett Electric Lighting Company bought the 2-story brick warehouse at 146 Dyer Street (for a battery-storage station) in back of which the company later built a three-story substation (c. 1924).

By 1913 the use of electricity for light and power had gained widespread acceptance and the city began the removal of all gas lights from city streets to replace them with electric lights; the same year the city granted the Narragansett Electric Lighting Company a franchise to provide the electricity for these street lights.

In 1913 the Narragansett Electric Lighting Company entirely rebuilt the South Station. The 1913 structure is a massive brick and granite-trimmed building in the Georgian Revival Style with large, roundhead windows and four, 217-foot, truss-braced chimney stacks. Although none of the equipment which was originally installed in the plant still survives, two 1919 Westinghouse steam turbines and a 1926 G.E. turbine remain in the plant. Since 1913 the company has expanded the complex so that the main building now supports seven stacks, six of which are connected by steel braces.

Between 1913 and 1921 the annual kilowatt-hour production at the South Street Plant increased by 500 per cent. For many years this company was the largest power company in the New England Power Association, which it had joined in 1926. Upon joining the association, the company changed its name to the Narragansett Electric Company. Five years later it bought the Manchester Street Powerhouse from the United Electric Railways Company (see Manchester Street).

The Narragansett Electric Company continues to operate the South Street Station, the Manchester Street Station, and the Dyer Street substation as well as several other stations outside the city.

460 Rhode Island Company Powerhouse (1904): The Rhode Island Company was formed in 1902. Owned by the New York, New Haven and Hartford Railroad, this company leased the trolley lines of the Union Railroad Company which ran trolleys to the towns and factories on the outskirts of Providence. The powerhouse, completed in 1904, was praised for its modern efficient construction and design. The Engineering *Record in* an article about the new plant noted that:

> the chief interest lies in the arrangement and details of the machinery and apparatus and in the attention paid to the architectural and constructional features of the building, resulting in a fireproof structure having a majestic exterior and a lofty well-lighted, and appropriately finished interior.

Today only half of the original powerhouse remains in a relatively unaltered form. It is a 4-story brick structure with false, stepped gables and huge, arcaded fenestration with granite trim. The southern section of the building was altered in 1913 when the powerhouse was enlarged.

In 1912 the City of Providence granted the Rhode Island Company an exclusive right to operate streetcars in Providence. In accorc with the terms of the franchise, the company removed the t from College Hill, repaired other city tracks, and built the East Side Tunnel through which their street cars were to travel. As the automobile and the motorized bus gained popularity, the Rhode Island Company began to lose business. Finally in 1921 the company declared bankruptcy. A year later the United Electric Railway Company formed to operate the trolleys. By the early 1930s, however, buses had completely overtaken the public-transportation market and the Manchester Street Power Station was abandoned. In 1932 the Narragansett Electric Company, which operated a power station further north up the harbor at South and Eddy Streets, bought the Manchester Street Power Station. This plant is still owned and operated by the Narragansett Electric Company, as is the South Street Station.

ERNEST STREET

1-37 Ernest Street City Sewage Pumping Station and Sewage Treatment Station (1897, 1900, and later): The first sewer system, which was put into operation in 1872, poured raw sewage into the rivers. It was not long before the city leaders realized that this system was seriously damaging the rivers, and in 1884 the city engineer, Samuel Grey, went to Europe to investigate the latest methods of sewage treatment and disposal. Grey presented a comprehensive plan to the city council in 1886, and the council called in a panel of engineers to study Grey's suggestions. This panel approved the plan in 1887, and in 1889 construction of this massive system was begun. By 1897, the city had completed the pumping station and the miles of sewers which ran at a downhill grade to Field's Point where the sewage was to be pumped into precipitation tanks before entering the river. However, the treatment station was not completed until 1900 so that massive amounts of untreated sewage were pumped into the Providence River for another three years.

The pumping station, below street level, is a 21/z-story structure with a hip roof; a small gabled dormer; and a large, arched doorway with Indiana-sandstone trim. Other detailing includes sandstone trim around the windows and copper trim on the roof eaves and ridges. The treatment station, closer to the harbor, consists of a 1- and 2-story, brick-and-granite, cross-gable-roofed laboratory; a 2-story, brick, gable-roofed chemical building; a 2-story, brick, hip-roofed press house; and concrete precipitation tanks. Mid-20th-century additions are located adjacent to the earlier structures.

FRIENDSHIP STREET

91 Horace Remington & Sons Company (1888): Horace Remington entered the silver and gold refining and smelting business as an apprentice in the large refining firm of John Austin & Company and several years later became the firm's manager. In 1881 Remington formed a partnership with Charles Barber who retired a few years later. When Remington's son Albert became a partner in 1888, Remington renamed the refining firm Horace Remington & Son. The business incorporated in 1901 as Horace Remington & Sons Company when Remington's younger sons, Horace E. and Clarence G. Remington, joined the firm. By the turn-of-the-century Horace Remington & Sons refined nearly a million ounces of silver a year. The business, one of the largest refining companies in the city, was known for its sophisticated machinery and innovative processes. One of Remington's inventions was a machine capable of mixing (to produce an even quality of metal) 1000 to 6000 pounds of sweepings in two hours time, an operation which traditionally took two workers ten hours to accomplish. Another machine collected the silver or gold dust which rose during the refining process.

When Horace Remington retired in 1923, Horace Remington & Sons was the oldest refining firm in the city. In 1969, when the president and treasurer of the refining company, Horace E. Remington, died, the Horace Remington & Sons Company ceased operations.

The Remington Building is a 5-story masonry structure with a flat roof, regularly spaced segmental-arch windows, and a metal cornice. This structure, one of the few late 19th-century industrial buildings remaining in this area, is now occupied by the Mara Jewelry Company.

301 Sylvester R. Jackson & Company (c. 1853):** Sylvester R. Jackson & Company, a soap and candle manufacturing firm, was founded in 1841 and was originally located on Bridgham Street. Sylvester Jackson purchased the Friendship Street site in 1843 and constructed the factory ten years later. Built on a scale in keeping with the modest residential structures in this neighborhood, the 21/z-story, brick, gable-roofed factory has a pendant cornice, rectangular windows with granite sills and lintels, and a 2nd-story freight door set in the gable end. Sylvester R. Jackson & Company manufactured soap and candles at this factory until 1866, when he sold the property to the Phetteplace & Bartlett Company, also a soap manufacturing firm. Occupied by Phetteplace & Bartlett and later by Woodley & Leonard, this structure continued to function as a soap factory until the turn-of-the-century. In 1903, Samuel Moore & Company, which had been located in one of the jewelry factories in the jewelry district, bought the former soap factory and refitted it for the manufacture of jewelry. Samuel Moore, founder of the company, was a machinist who had patented mechanisms to produce such diverse objects as freight and passenger car wheels, shoe nails, twist drills, shot chains, and beaded wire. Samuel Moore & Company, which specialized in jewelry findings, greatly expanded its line in the 1890s and early 1900s and consequently was vitally important to jewelry-manufacturing centers in the United States. After Moore's death in 1935, Samuel Moore & Company continued to operate under family management until 1961, when the company became a division of the Fulford Manufacturing Company (see 107 Stewart Street). Samuel Moore & Company continues to manufacture jewelry findings at this site.

GLOBE STREET

80 Providence Gas Company (c. 1870, c. 1876): The Providence Gas Company was established in 1848 by Amos D. Smith and other investors and was located on Pike and Benefit Streets. By 1849 meters were in use, mostly downtown where the first mains were laid. Because oil lamps required constant cleaning and maintenance, while gas lamps needed relatively little care, gas lighting soon replaced oil lighting for both street lamps and house lights in the rest of the city. Brick gasometers (for storing coal gas) were located in various neighborhoods. Three survive: at Westfield Street, the Atlantic Mill Site (see 120 Manton Avenue), and the Wansk plant have been demolished, but two buildings of the West Station remain. The earliest building (c. 1870) is an unusual, large, 2 1/2-story, brick, basilica-plan building distinguished by its elaborate corbeling and roundhead windows with hood molds. This building might have been used for processing coal gas. Probably built for office and storage space, the other remaining building (c. 1876) is a 2-story, brick, trapezoidal structure with ornamental corbeling and segmental-arch windows. This structure has been altered by the removal of its mansard roof.

Two years after the construction of the West Station, the Providence Gas Company built a huge gasometer on Crary and Hospital Streets. This gasometer, one of the largest in New England at the time that it was built, was designed by Clifton A. Hall. Known as the Crary Street Gasometer, this 7-story, metal-lined, brick silo with a tall dome crowned by a lantern was 148 feet in diameter. By 1938, however, with more modern gas holders in use, the Crary Street Gasometer had been abandoned and was demolished to make way for a play ground; Interstate 95 now runs through this site. In 1910 the gas company built a new plant at Sassafras Point. This plant was used as a coal-gas station and soon after its completion the West Station was abandoned. The old gas station was used by various companies during the 20th century. Today the earliest building is occupied by the Leeming Brothers Construction Company which has been here since the 1950s. The later structure is occupied by a chemical company. The South Station was operated as a water-gas plant (the production of gas released from water molecules began in the late 19th century and continued into the early 20th century) until 1916 when a water-gas plant was incorporated into Sassafras Point. A plant built in the mid-Thirties for water gas was later used for oil gas and was abandoned in the early 1970s. In 1976, a huge, early 20th-century, cylindrical, metal-frame gas holder on Blackstone Street was demolished, although an adjacent 1-story brick heater and regulator house with a pitched roof and rectangular windows with granite sills and lintels still remains. Two early 20th-century steel-framed gas holders and five early 20th-century, monitor-roofed structures still survive at the Sassafras Point plant.

GORDON AVENUE

20 Beaman & Smith, (1898 and later): The Beaman & Smith Company was founded in 1886 by Elmer A. Beaman and George H. Smith for the manufacture of metal-working machine tools. In 1898 the company incorporated and built afactory on Gordon Street. This 2-story, steel-framed, brick and-glass structure has an extension at the rear which was used for stockrooms and a blacksmith's shop. A 1-story pattern-storage building was erected to the north of the main building. New wings were added to the plant in the early 20th-century. Beaman & Smith Company was noted for its milling and boring machines, some of which weighed up to 65 tons. By the turn-of-the-century, the plant employed seventy five to one hundred workers and covered a city block with l and 2-story buildings. The company went out of business in 1927. From the 1930s to the early 1960s, this factory was occupied by the James Hill Company, a can manufacturer. Today most of the plant is occupied by a printing firm.

69-105 American Tubing & Webbing Company (1896): This 5-story, brick, flat-roofed building with large segmental arch windows was built for the American Tubing & Webbing Company, manufacturers of flexible, gas tubing for elevator droplights, wicks for oilstoves, and silk and cotton, elastic, garter webbings. Founded in 1883 by Arthur Caldwell as theAmerican Tubing & Manufacturing Company, the company incorporated in 1891 under the new name of the American Tubing & Webbing Company, and built a new factory in 1896. When completed, it was noted as the largest manufacturing plant in the United States devoted to this line of business. Although the business was thriving in 1901 (according to a trade book published at that time), the factory and machinery were sold at auction to the Glendale Elastic Fabric Company in 1903. Most likely the bankruptcy of the American Tubing & Webbing Company was caused by the business recession of 1903 and overexpansion or overproduction. The Glendale Elastic Fabric Company, based in Easthampton, Massachusetts, opened a branch factory in the American Tubing & Webbing Company building. This company, which also manufactured elastic threads and fabrics, remained here until 1928 when (like many companies which were consolidating their holdings at this time) Glendale Elastics sold its Providence plant to the Chiapinelli Company which converted part of the tubing and webbing factory to jewelry manufacturing. The Chiapinelli Company, named for its founder and president Salvatore Chiapinelli, manufactured jewelry in this factory for twenty-six years. Chiapinelli was also the president of the Geneva Insulated Wire Company which occupied part of the factory during the 1940s, 1950s, and 1960s. Although neither company remains in the factory today the structure is still known as the Chiapinelli Building. In 1971 the Chiapinelli Company sold the factory to the E. and F. Realty Company; today it is occupied by a restaurant-supply company.

HARRIS AVENUE

City Machine Company (1868 and later): Founded in 1865, the City Machine Company produced fly frames and roving frames for cotton-yarn manufacturing. Between 1865 and 1882, the company more than doubled in size, having increased its workforce from 60 workers to 135. In 1888, the Woonsocket Machine Company purchased the City Machine Company and moved all operations to its Woonsocket plant. One year later the George W. Stafford Manufacturing Company bought the machine works. Stafford produced loom-harness regulators such as dobbies and witches as well as Jacquard fancy-weaving looms. The president of the company was Gardiner Sims, the cofounder of the Armington and Sims Engine Company nearby on Eagle Street; George W. Stafford was the treasurer and general manager of the company. In 1895, the Knowles Looms Works, which had a well established reputation for its quality woolen and worsted looms, bought the works of the Stafford Manufacturing Company. Two years later the Knowles Loom Works and the Crompton Loom Works, another major loom manufacturer, merged. The Crompton and Knowles Loom Works was the largest loom manufacturing company in the world with numerous plants in the United States and England. Crompton and Knowles sold its Harris Avenue plant in the late 1930s. Since then the complex has been occupied by numerous small manufacturing companies.

The textile-machine works covers more than one city block with numerous 1- 2- and 3-story brick structures built between 1868 and the late 1920s. The original, 3-story, brick, machine shop with a gable roof, corbeled cornice, and segmental-arch windows still remains.

IMPERIAL PLACE

Vesta Knitting Mills (1893, 1903): In 1883 Rudolph Berry established a company to manufacture ribbed, knitted underwear and hosery made on circular-knitting machines. This type of jersey underwear for women and children previously had been imported from France, England, and Switzerland. Berry's company started in a small, 2-story building. By 1888 he had outgrown these structures and built two 3-story buildings. A few years later, in 1891, the business incorporated as the Vesta Knitting Mills. By this time the company had doubled its output of knitted goods. The machinery included spinning, carding, drying, scouring, and knitting machines which were operated by 300 employees. The company soon established a sales office in New York and Vesta products were distributed throughout the country.

The Vesta Knitting Mills, one of the few textile companies located in this part of the city, took advantage of the proximity of the jewelry district in a few blocks to the northeast when it expanded its factory in 1893 and 1903. The Vesta Company occupied most of its 1893 factory-a handsome, 6-story, brick structure with segmental-arch windows, rounded corners, and a corbeled cornice-and rented the remaining space to jewelry manufacturers. With jewelry-manufacturing rental space at a premium in or near the jewelry district, the Vesta Knitting Mills soon invested in a second large factory designed primarily for jewelry manufacturing. The company rented five of the six floors to jewelry manufacturers and occupied one floor of the new structure. This plain brick structure with a flat roof, segmental-arch windows, and granite sills is adjacent to the earlier structure. In 1916 the Vesta Knitting Mills reorganized as the Vesta Underwear Company with Ovide de St. Aubin as the president and his brother Percival as the treasurer. By 1930 the Vesta Underwear Company was producing 4000 dozen garments a week. In 1941, however, the Vesta Underwear Company closed its plant and sold the buildings to the Imperial Knife Company which already occupied the 1903 structure. The Imperial Knife Company founded by Felix Mirando was the first large American manufacturer of jack knives, a product which had previously been imported from Germany and England. By 1929 the company employed 1,000 workers. The Imperial Knife Company, which now manufactures all kinds of cutlery, still occupies these buildings.

KINSLEY STREET

530-532 Monohasset Mill (1866): J. C. Bucklin, architect. Monohasset Mill was established by Paine & Sackett in 1866 as a woolen mill. The main building-a 4-story, brick structure with granite trim, a flank-gambrel roof, and a 5-story, flat-top tower which originally had a steep hip roof-contained the engine room, boiler room, drying room, and packing room. The tower contained stairways, dressing rooms, and an elevator. The 2-story, hip-roofed, brick building contained woolshops and more boiler and engine rooms. The Monohasset Mill specialized in the production of fancy assimers and was known during its twenty-one years in operation as one of the best woolen manufacturers in the country.

In 1887 the woolen mill was taken over by the Armington & Sims Engine Company, established in 1878 by Pardon Armington and Gardiner Sims, which was formerly located on the western part of Westminster Street. The engine company built engines for the Riverside Worsted Mills, the Silver Spring Dyeing & Bleaching Company, and other mills in the United States and abroad. In the 1880s the Armington & Sims Engine Company won several gold medals for its engines at national and international expositions.

Probably due to the business depression which followed the panic of 1893, Armington &-Sims failed in 1896 and the factory and machinery were sold at auction to Julius Palmer, F. M. Bushnell, and James M. Scott. The new company, which retained the same name, was sued by Armington and Sims who had not given permission for their name to be used. The name of the company was subsequently changed to the Eastern Engine Company. This company lasted until 1903.

During the 20th century, the mill was used by several worsted companies, one of which was the Cleveland Worsted Mills, which occupied part of the mill for almost twenty years. In the 1940s and early 1950s the mill was occupied by machinery dealers, worsted mills, a rug manufacturer, and a jewelry manufacturer. The Monohasset Mill was last occupied by a woolen or worsted company in 1955; since then it has been utilized by several small jewelry and industrial companies.

MANTON AVENUE

120* Atlantic Delaine Mills (1863, and later): Originally located farther east near the junction of Manton Avenue, Hartford Avenue, and Plainfield Street, the first mill of the Atlantic Delaine Company was built in 1851 by General C. T. James to manufacture delaine; only the first floor of this mill survives as part of a supermarket. In 1863 the Atlantic Delaine Company built an impressive 3-story, brick, pier-and-spandrel mill structure with an unusual round-domed tower surmounted by a glazed lantern; this mill was located immediately west of the 1851 mill. Built as a worsted mill, the 1863 mill contained worsted rooms, spinning rooms, spoiling rooms, warping rooms, and dressing rooms. The brick gasometer, built at the same time, still survives though its original dome and lantern have been removed. These structures were designed by Clifton A. Hall. In 1882, a mill, nearly identical to the 1863 structure was constructed also with a domed tower. This mill is connected to the west side of the 1863 mill. Other buildings in the complex include: a 4-story brick mill (c.1871) whch was used for dy6ing and finishing; a 3-story, brick, worsted mill (1893) which is behind the main mills; a brick office building (1899); and a 4-story brick mill (1899) with segmental-arch windows, granite sills, and a slightly pitched roof. In addition to these mill buildings, the Atlantic Delaine Company built numerous workers' houses. By 1872, the company was responsible for the construction of 57 workers' houses containing 163 apartments.

By 1865 the Atlantic Delaine Company was best known for its fine alpacas (which, according to the Providence Journal, were only equaled in New England by the Pacific Mill of Law rence, Massachusetts). Most of the specialized woolen and worsted machinery was imported from Germany, although some less specialized machines were supplied by Thomas Hill of the Providence Machine Company (see 36 Allens Avenue). The Atlantic Delaine Company went bankrupt in the panic of 1873, and in 1879 the land, mill buildings, and machinery were sold at auction. The new owners incorporated as the Atlantic Mills. By the late 1880s the Atlantic Mills was well known for its worsted and cotton-warp fabrics. By this time the mill operation was the largest in Providence, employing 2,100 workers. In 1903 the Atlantic Mills began manufacturing khaki (in ad for uniforms. The A. D. Julliard Company bought the Atlantic Mills in 1904 and operated the mill for nearly fifty years. In 1953, however, the A. D. Julliard Company, like numerous other faltering New England textile companies during the 1930s, 1940s and 1950s, ceased operations and sold its mill property. The main buildings of the Atlantic Mills now provide primarily commercial space.

610 Dyerville Mill (1835):** The Dyerville Mill, probably the oldest and least altered mill in Providence, is a 3-story, stuccoed-stone, L-shaped structure with a gable roof and a square central tower surmounted by a small, wooden, arcaded belfry. In front of the main building is a 1-story office (c.1850) with a hip roof, a deep entablature under a modillion cornice, and paneled corner pilasters; the central entrance with sidelights and transom is surmounted by a projecting pediment supported on consoles. The facade which might originally have been a 5-bay arrangement has tripartite windows on either side of the entrance. The interior of the office was heavily altered in the late 19th or early 20th century. A stone picker house located on the southwest side of the mill, a 1story brick extension originally used as a weave shed (which is now connected to a modern concrete addition), and a wooden wheel house and boiler house (both to the northwest of the main building) still survive. Also remaining is the dam on the Woonasquatucket River from which ran a raceway (providing water power for the mill) although the gates of the dam have been removed.

The Dyerville Mill was founded by Elisha Dyer, a successful Providence commission merchant. Dyer, like many Providence merchants, reinvested his money in manufacturing as trade became less profitable. By 1849 the Dyerville Mill employed thirty men and thirty-five women who turned out 800,000 yards of calico cloth a year. Elisha Dyer, Jr., who was governor of Rhode island from 1857 to 1859, took over the company when his father died in 1854. Dyer was the sole owner and agent for the company until 1867 when he sold the mill to the Beckwith family. Truman Beckwith, owner of the largest cotton-brokerage firm in Providence, and his son Amos (who acted as the agent for the company) incorporated the firm as the Dyerville Manufacturing Company. By 1870 the company employed forty men, forty-eight women, and twenty-four children.

With the New England cotton industry already facing competition from the South by the turn-of-the-century, however, attempts were made at diversification. In 1903 the Joslin Manufacturing Company, a braid and shoelace manufacturer, bought the Dyerville Mill as well as the Merino Mill (61 Ponagansett Avenue). The Joslin Manufacturing Company sold the Dyerville Mill to a wholesale grocery company in 1931. This company although no longer the owner, continues to occupy part of the mill. Today the Dyerville Mill is owned and partially occupied by the Leonard Jewelry Company which first occupied part of the complex in 1949. The mill complex also houses several other light industries.

MASHPAUG STREET

1 John & Thomas Hope Company (1882): The John & Thomas Hope Company was established in Providence in 1850 and provided a unique and much needed service for the printing industry. John Hope invented the first efficient pantograph engraving machine. These machines in one step transferred and engraved in copper printing rolls the design from two-dimensional pattern. Even thirty years after this company was founded it could claim to be the only pantograph-engraver manufacturer and the only supplier of these items to printing establishments in this country as well as in Europe. In 1882 the firm built its new factory on Mashpaug Street in Elmwood. This simple, unadorned building has a slightly pitched roof and segmental-arch windows with granite sills. The company incorporated in 1890 as John Hope & Sons and continued manufacturing pantograph engravers and engraving cylinders until 1930. The company ramained in family control until both of John's sons died in the late 1920s, and the company was taken over by Andrew Stockman. Under Stockman's control, the interior of the plant was remodeled and modernized and a photo-engraving department was added. The John Hope and Sons Company also began engraving brass cylinders which were used for embossing paper. John Hope and Sons remained in the Mashpaug Street factory until 1936. Since then, this factory has been occupied by more than one company. The longest to remain in the building was the Koffler Trunk Company which manufactured trunks here from 1937 until the 1960s. The John and Thomas Hope factory is now occupied by a moving company and a jewelry-tool manufacturer.

NORTH MAIN STREET

530 The American Screw Company-Additions to the Bay State Mills (c. 1882, c. 1908):** The once huge complex of the American Screw Company's Bay State and Eagle Mills on the north and south sides of Stevens Street were destroyed in a 1973 fire. Of the two remaining buildings which were known as the Hewes Street additions to the Bay State Mills, the earliest is the 2-story brick structure (c. 1882) with a broad pitched roof and a fine corbeled cornice. The later mill (c. 1900) just north of and enveloping some of the 1882 addition is a large, 3-story, brick structure with a simple cornice and a flat roof. This large, rounded-triangular shaped building is located at the prominent corner of North Main and Stevens Street, and, with the earlier Bay State addition, stands as an important reminder of one of Providence's largest industries. The American Screw Company was made up of the Eagle Screw Company, incorporated in 1838, and The New England Screw Company, incorporated in 1840. These two firms, which manufactured machine and wood screws, merged in 1860 under the direction of William G. Angell, one of the founders of the Eagle Screw Company, to form the American Screw Company. By 1886 the American Screw Company was one of the three largest screw companies in the country. It occupied this huge complex (as well as a factory next to the Providence Harbor on Eddy Street) until 1949 when it moved to Connecticut. During the 1950s and 1960s, the various buildings were occupied by several different businesses, but by the early 1970s the mills were largely vacant. At this point the still intact original mill complex was placed on the National Register of Historic Places. After the 1973 fire, however, with almost all of the original buildings destroyed, these two additions to the Bay State mills, as well as the Stillman White Brass Foundry (see 1 Bark Street) and the Fletcher Building (see 47 Charles Street) were placed on the National Register. Soon after the American Screw Company buildings were rehabilitated-the earlier building as a restaurant, and the large early 20th-century mill for use by the Rhode Island Group Health Association.

OXFORD STREET

212-216 Luther Brothers (c. 1865 and later): The Luther Brothers firm, run by William and Edward Luther, was founded by William Luther in 1870 to manufacture novelty jewelry. Though not the originators of the electroplating process, the Luther Brothers firm introduced electroplating to its factory as soon as the patent for the process expired in the 1870s. By 1890, the company was the largest manufacturer of electro-plated novelty jewelry in the United States and Europe. By 1877 the Luther Brothers firm had outgrown its rented quarters in the Dyer Land Company Building and bought a 2-story structure known as Temperance Hall (built by the St. Michael's Abstinence Society) with enough land for future expansion. The Luther Brothers immediately raised the structure one story. The Luther Brothers factory was then a 3-story, gable-roofed structure with 4-over-4 rectangular windows and a cupola with paired round-arch windows and a peaked roof. This structure has been greatly altered from its 1880s appearance: the clapboards have been covered with modern siding; the window sash has been modified; and the cupola has been removed. The 1- and 2-story wooden wings were built in the early 1880s, and the 1-story brick addition on Harriet Street was built in 1900. The rapid physical expansion of the company in the 1880s was the result of the Luther Brother's decision to add new operations, such as gift-box and locket manufacturing, to its business. In addition, the Luther Brothers firm dramatically increased its shirt-stud production with the invention of a stud-wire machine capable of turning out 2,000 wires per hour. In 1888, Edward Luther retired and William Luther's son Frederick joined the firm, which operated under the new name of William Luther and Son. William Luther and Son continued operations at its South Providence factory until 1917, when it sold the property to Frank H. Goodwin of the Goodwin Bradley Pattern Company, manufacturers of wood and metal-production patterns. Goodwin Bradley, which also makes molds for the plastic industry, still remains at this site.

PEARL STREET

304 The New England Butt Company Complex (c. 1850, 1865, and later): The New England Butt Company, established in 1842 by N. A. Fenner, originally manufactured cast-iron butt hinges. By 1880, however, the introduction of cheaper, stamped-metal butts rendered cast-iron butts obsolete, and the company turned to the manufacturer of braiding machinery. The oldest building in the complex is the much altered 2-story, monitor-roofed, frame building in the center of the block on Perkins Street, built between 1849 and 1857. The main building, constructed in 1865 from plans by Spencer R. Read, is a handsome, gable-roofed, brick structure with corbeled brick cornices, brick window caps, and arched door surrounds. This building, fronting on Pearl Street, was originally used for machining and assembling, but is now used for offices. A long, brick, 2-story wing built at the same time behind the main building was later raised to three stories. Although this building has window caps identical to the main building, it may incorporate an older structure. In 1951 a large, flat, 1-story, glass-and-brick structure replaced the foundry on Perkins and Rice Streets. By 1901 the New England Butt Company employed 200 skilled workmen in the manufacture of braiding machines for silk, worsted, and cotton braid as well as telephone, electric light, and crinoline wire. The Wanskuck Corporation bought the New England Butt Company in 1955. The factory continues to produce braiding machinery and cabling machinery at this site as well as at the works of the former Providence Steam Engine Company (see 521 South Main Street).

PIKE STREET

Fuller Iron Works (1869, 1893): The Fuller Iron Works, established by Frederick Fuller in 1839, first occupied the old wooden buildings of the Fox Point Foundry on the northeastern corner of South Main Street (then called Fox Point Street) and Pike Street. By 1850 the Providence Directory noted that "the Fuller's Foundry and Machine Shop is an extensive establishment and is in very flourishing condition." The Fuller Iron Works produced heavy-machine castings, water pipes, steam engines, and other heavy-metal products. Upon Frederick Fuller's death in 1867, his sons, Frederick and George, took over the business and erected the 3-story brick building with a low, pitched-gable roof and segmental-arch windows with granite sills on the southeast corner on south Main and Pike Streets. In 1893, the Fuller Iron Works built the glass and steel machine shop (which is now covered by modern siding) located to the south of the earlier structure. It was the first steel-frame and glass machine shop in Providence. The Fuller Iron Works, which continued to be controlled by the Fuller family, ceased operations in 1937 when R. Clinton Fuller shifted entirely to the field of real estate, having founded several years earlier the Fuller Real Estate Company. For quite a few years the 1869 machine shop was used by a social-service organization. In the 1960s, the building was converted to office use and the tall central window on the north elevation was installed.

PINE STREET

52-Hanley Building (1910-1911): William R. Walker and Son, architects. A six-story, brick-sheathed building with a flat roof, a boxed-and-bracketed metal cornice, and vertical block massing with truncated corners-this structure was built for James Hanley (of Hanley's Brewery), who intended it to be used for light-industrial purposes. It has a slightly altered, wood and plateglass 1st-story storefront with the upper stories articulated by a pier-and-spandrel system which culminates in round-head arches above the fifth story. Fenestration consists of Chicago windows on the second through fifth stories and evenly spaced sash windows on the sixth story. The first occupants of this handsome industrial building were a gold-leaf manufacturer, a dye-stuff company, a book-binder, a printer, and an electric-supply company. Following the trend of deindustrialization of this downtown area, this structure has recently been converted for use as an office building.

158 Jesse Metcalf Building (1896): Named for the founder of the Wanskuck Mills (see 725 Branch Avenue) and owned as an investment property by his daughters, Eliza Raedeke and Sophia Baker, the Jesse Metcalf Building was built especially for jewelry-manufacturing businesses. The 5-story brick structure with cast-iron storefronts, large segmental-arch windows, pier-and-spandrel articulation on the upper stories, anda corbeled cornice was divided into numerous rental units,each equipped with the latest, improved forges and windpipes. The power-generating system was electric as was the lighting system. Additional light was provided by two light shafts in the center of the building. The jewelry companies located in the Metcalf Building were generally small with an average of about nineteen workers per company. In 1920, the Metcalf Building was bought by a realty company. Known for many years both as the Standard Building after the Stand ard RealtyCompany, a twenty-year owner of the building, and the Page Realty Company Building after a later owner, the Metcalf Building is now owned and partially occupied by the J. I. Manufacturing Company, a jewelry manufacturer. Several other small or moderately sized jewelry companies now occupy the Metcalf Building.

PLEASANT VALLEY PARKWAY

95 Coca-Cola Bottling Plant (1939): Coca-Cola began its Providence bottling operation at 477 Smith Street in 1917. In 1939, the company built the present structure designed by the Atlanta architectural firm of Robert and Company, which was retained by Coca-Cola to design Coca-Cola Bottling Plants. A 2-story block at the front of the structure contains officespace, while bottling machinery and warehouse space occupy the remaining interior space. The office block has a 3-bay facade with a center entrance and vertical concrete spandrels decorated with stylized versions of the company's product. Horizontal-band casement windows illuminate the plant area. This plant, with others like it constructed between 1927 and 1949, was built from one of a series of plans sanctioned by the Coca-Cola Company's Committee on Standards, which approved designs for all company products.

POINT STREET

69 Davol Rubber Company (1880, c. 1884, and later): The Davol Rubber Company, founded by Emery Perkins and Joseph Davol in 1874 as the Perkins Manufacturing Company, was the result of two years of experiments and inventions by Joseph Davol. Although the manufacture of rubber goods such as boots and shoes was well established in the United States, and there were a few such manufacturers in Providence, the processes used by Davol to manufacture drug and surgical supplies were entirely new to this country. In 1878, Davol assumed control of the company which he renamed the Davol Manufacturing Company. Incorporated in 1882 as the Davol Manufacturing Company and in 1884 as the Davol Rubber Company, the firm was the international leader in the

production of rubber drug-and-surgical supplies by 1888 and had markets for its goods in South America, Germany, Australia, China, and Japan, as well as in all parts of the United States. The Davol Rubber Company continued to expand in the twentieth century under the leadership of Davol's son, Charles Davol; between 1900 and 1930, the company increased its workforce from 275 to 600. In 1932 the company reorganized as Davol, Inc., having expanded its line beyond rubber goods.

The original site of the Davol Rubber Company was near the site of the planing works owned by Davol's grandfatherin-law, Eban Simmons. The earliest existing structure built for the company is the Simmons Building on the south side of Point Street. Named for Eban Simmons, the Simmons Building (1880) is a long, 4-story, brick structure with a flat roof, granite beltcourses above rectangular windows, and 1st-story castiron storefronts. In the late 1880s and 1890s the Simmons Building was occupied mainly by jewelry manufacturers, but by the early 20th century it was reoccupied by the Davol Rubber Company. The main complex of the Davol Rubber Company, on the north side of Point Street, contains several late 19th-and early 20th-century structures, the earliest of which is a 3-story brick structure (1884) with segmental-arch windows, a 5-bay storefront with large round-arch windows, and a central arched doorway. About five years later, the company constructed a nearly identical, 3-story structure which was connected to the 1884 structure by a small, 3-bay, 3-story structure with rectangular windows and a large rectangular central entrance. As intended, the three structures present a symmetrical facade on the Point Street elevation. Other structures in the complex include a 2-story, brick office (c. 1900; second story added later); a long, 4-story, steel-frame brick structure (1913; fourth story added in 1960); and numerous late 19thand early 20th-century additions at the rear of the complex. In 1969 Davol, Inc., built an additional plant in Cranston, and in 1977 the company vacated its Point Street plant for a modern factory in North Carolina. The Davol Rubber Company Complex is currently being developed for adaptive re-use.

118 Barstow Stove Company (1849 and later): The Barstow Stove Company was established in 1836 by Amos Chafee Barstow. Barstow had first been a stove dealer on Weybosset Street and later was proprietor of the City Furnace on Broad Street. Barstow built a new stove foundry on Point Street in 1849. The first ranges turned out at the Barstow factory were called Bay State Stoves. These coal and wood stoves soon became a national favorite. For a short period of time in the early 1850s, the Barstow Stove Company produced heavy castings for Corliss Engines, but with the increased demand for stoves this pursuit was dropped.
In 1851, the company won several prizes for its wood and coal stoves; these stoves included the Bay State Wood and Coal Stoves, the Banner Stove, the Hedenberg Coal Stove, and the Pyramid Stove.

Most of the construction of the Barstow Stove Factory Complex took place in the 1850s and 1860s, but only three buildings survive of the complex which nearly filled the Point, Chestnut, and Richmond Street Block. The earliest of these structures is a 31/2-story (third story added in 1864), brick, gable-roofed structure (1849) with a clerestory monitor, a corbeled cornice, and rectangular windows with granite lintels. On the east side of this building is a 41/2-story structure (c. 1855) with a jerkin-head roof (which appears flat from the street level) and rectangular windows with granite sills and lintels. The other surviving structure is a later, 3-story, brick building with a flat roof. The Barstow Stove Company incorporated in 1859. Barstow, who had been the mayor of Providence in 1852 and 1853 and who remained active in city and state government, was named the president of the newly incorporated company. Barstow's son, Amos C. Barstow, Jr., was named treasurer. At this time the company's works covered two-and-one-half acres; the complex included two molding rooms, a flask-storage building which held up to 9,000 flasks, a room for mounting stoves, storage areas which held up to 5,000 stoves, and a storage area for patterns which were designed in the factory under Barstow patents. The company employed 200 workers and produced 50 different varieties of stoves and furnaces. In 1873 the company received the grand medal of merit at the Vienna World's Fair for the best cooking stoves and ranges.

Amos C. Barstow died in 1892 and his son Amos Barstow, Jr., became company president. Under his leadership, the Barstow Stove Company acquired the Spicer Stove Company, another Providence-based firm, well known for its Model Grand Stove. The Barstow Stove Company also acquired all of the Spicer patterns and stock, making it the only stove foundry in Providence and the largest stove company in New England.

Upon the death of Amos Barstow, Jr., in 1903, his son, J. Palmer Barstow, took over the business. J. P. Barstow reorganized the company under a new charter in 1919. In 1920, the company acquired joint ownership with another stove company of a former electric plant in Rehoboth which they used for a gas-stove enameling plant. By this time gas stoves had overtaken the stove market. Also because of the increasing use of gas stoves, the decision was reached in 1927 to convert the foundry into a gas-stove assembly area. The Barstow Stove Company made arrangements to buy castings from the Builders Iron Foundry. This decision meant reducing the work force by seventy-five people, mostly molders. In 1928 the company produced one of its last new models, a fully enameled gas stove which featured an insulated heat-controlled oven, a patented top-burner thermostat, and a fully insulated broiler. In 1930 the Barstow Stove Company failed. For about ten years part of the plant was occupied by Home Service Inc., a household-repair company. Various manufacturers occupied the factory including a Barstow Repair Parts Company which lasted two years after the stove-company's end. Since 1974, Tops Electric Supply Company has occupied the factory.

167 Coro Company (1929): The Coro Company, whichstarted as the Cohn & Rosenburger jewelry firm located in New York City, formed a Providence branch in 1911 at Abbott Park Place. Having outgrown its rented quarters, the Coropany commissioned Frank S. Perry to design a new build ing which was dedicated in 1929. The Coro building is a 3-story, U-shaped structure with a flat roof and a decorated parapet. Other features include a reinforced-concrete frame and a glass curtain wall. In 1947 the Edward Sturgeon Company (which was the contractor for the main building) constructed an addition to the west side of the factory. According to the Providence Journal, The Coro Company was the largest manufacturer of costume jewelry in the 1950s and 1960s. By 1964 Coro Inc. operated three branch plants in Providence, Olneyville, and Bristol. Two subsidiary companies were located in Canada and England. By 1970 the Coro Company had bought several other firms. The same year the Coro Company became a subsidiary of Richton International Corporation. In 1979 Richton International closed its Point Street factory; the Coro building is currently vacant.

PONAGANSETT AVENUE

61 Merino Mills (1851 and later): The Merino Mills, one of the earliest mills in Olneyville, was established in 1812 by John Waterman, who reputedly built the 18th-century farmhouse nearby on Ponagansett Avenue. The mill was built to manufacture merino cloth. The original mill was destroyed by fire in 1841 and was rebuilt in 1851 by the Franklin Manufacturing Company which used the mill to produce cotton cloth. The present complex is a group of connected stuccoed-stone buildings. The 1851 building is a 3-story, T-shaped, gable-roofed stone building with many regularly spaced multi-paned windows and a wooden, open belfry surmounted by a pinnacle near the crossing. The later buildings have dormered mansard roofs. The Franklin Manufacturing Company, run by C. H. and H. P. Franklin, operated the mill for almost 40 years. By 1888 the company was operating 30,000 spindles and employed 325 workers. In the late 19th century the plant was bought by the Joslin Manufacturing Company, which sold the spinning and weav ing machinery and used the mills for the finishing of tubular and flat shoe laces, laced braids, and corset laces. The Joslin Manufacturing Company owned four other mills which were connected by trolley cars. By 1907 the company was still run by water power from the Woonasquatucket River which produced 250 horsepower. The Joslin Manufacturing Company operated this mill until the 1930s. The Merino Mill is now occupied by the Lincoln Lace and Braid Company.

PROMENADE STREET

235* Brown & Sharpe Manufacturing Company Complex (1872 and later): **The Brown & Sharpe Manufactur**ing Company which was of worldwide importance to the growth and development of the precision-tool industry, began as a small, watch- and clock-making company founded by David Brown and his son Joseph in 1833. When David Brown emigrated from Providence to Illinois in 1841, Joseph Brown took over the business and began making small tools and lathes in his shop on South Main Street. Joseph Brown's first important invention was an automatic, linear-dividing machine which made possible the production of the vernier caliper in 1851. The vernier caliper was a precision measuring tool which was lauded by machinists for greatly improving the accuracy of their work. Joseph Brown's company made other important advances in the 1850s. In 1853 Lucian Sharpe, who had been an apprentice with Joseph Brown since 1848, was made a full partner, resulting in the new company known as J. . Brown & Sharpe. This arrangement left Brown free to handle mechanical problems while Sharpe directed the business activities of the firm. In 1855, Brown invented a precision gear cutter used in the manufacture of gears for clocks and other instruments or machines. The most significant event of the 1850s, however, was the procurement of a contract to manufacture Wilcox & Gibbs sewing machines. The sewing machine, with its interchangeable parts, was largely responsible for the further development of precision measuring and machine tools which were necessary for the economical and accurate manufacture of that product. During the 1860s Brown & Sharpe continued to grow rapidly. In 1861 the company built its first commercial machine tool, a turret lathe or screw machine, which was used in the manufacture of percus 400 sion-lock muskets. This machine was designed by Joseph Brown and noted inventor Frederick Howe (then superintendent of the Providence Tool Company, who later joined Brown & Sharpe). Another Brown and Howe collaborative effort produced the Universal Milling machine in 1862. In 1868 Brown invented the Universal Grinding Machine. Before J. R. Brown & cmpany incorporated as the Brown & Sharpe Manufacturing Company in 1868, Samuel Darling of Bangor, Maine,brn and Sharpe's only competitor in the manufacture of uality measuring tools, was invited to join Brown & Sharpe.Darling, Brown, & Sharpe functioned as a separate company specializing in precision tools until 1896 when Darling was bought out and the works became another department of rown & Sharpe Manufacturing Co.

After Joseph Brown's death in 1876, Lucian Sharpe, aided by highly skilled engineers, continued to expand and refine the company's line. Oscar Beale, a Brown & Sharpe engineer,made a major contribution to the integrity of precision measuring tools when he completed a new system of measurements (started by Joseph Brown) known as the B & S Standard. In the 20th century, Lucian's son, Henry Dexter Sharpe, was an important force in Brown & Sharpe's growth into a corporate giant. In his fifty years with the company, he made significant manufacturing contributions. Henry Dexter Sharpe, Jr., was responsible for the reorganization of the company on a ivisional basis and for the introduction of modified mass-production techniques in the 1950s.

In 1964, Brown & Sharpe moved to a new plant in North Kingstown. The Brown & Sharpe Complex, now known as the Capital Industrial Center (CIC), is ccupied by several industries, businesses, and state agencies.

The Brown & Sharpe Manufacturing Company, which had grown from a small company with a work force of fourteen in the 1850s to two hundred workers in 868, was overcrowded at the South Main Street factory and plans were drawn for a new factory complex on Promenade Street; the first building was completed in 1872. Frederick Howe who had joined the company in 1868 was largely responsible for the design of the Brown & Sharpe complex which was lauded as a model of handsome and efficient industrial construction. The first building of the Brown & Sharpe factory (facing Promenade Street) is a 41/2-story (fourth story added in the late 1890s or early 1900s) brick structure with segmental-arch windows separated by brick pilasters. Other buildings constructed before 1875 were a drawing room, a central wing, and an east wing. The southern section of the Promenade Street structure was added in the late 1870s or early 1880s. The two buildings on Beach Street were built in 1895 and 1916. The complex followed the hollow-square plan which was noted for making use of a limited amount of land. A factory planned along these lines also evoked a sense of order noticeably lacking in some industrial complexes which appeared at this time.

RESERVOIR AVENUE

400 California Artificial Flower Company (1939): Albert Harkness, architect. The California Artificial Flower Company (known as Cal-Art) was founded in 1922 by Michael D'Agnillo, an Italian immigrant, who turned his hobby of making paper and cloth flowers into a means of support. The flowers were first used by stores in their display windows, but soon were sold to the general public as their popularity increased for home use. D'Agnillo operated his factory in leased floors of the building at 263 W eybosset Street and employed 300 workers, mostly women, who D'Agnillo trained for six months.

As in the costume-jewelry factories, most of the work was handwork requiring manual dexterity, but unlike costumejewelry management D'Agnillo paid his workers a weekly salary instead of a piecework rate. By the 1930s, the California Artificial Flower Company had grown considerably with numerous lines of flowers-including Los Angeles roses, Russian violets, dahlias, and rhododendron-and had established several sales offices in various parts of the country. With the company's steady growth, it had soon outgrown its rented quarters on Weybosset Street. Completed in 1939, the Cal-Artfactory is a 3-story brick structure with a continuous band of windows around each of the three stories. Distinctive features of this Art-Deco industrial building are the tall octagonal tower with the name of the company in elongated letters around the top and the stainless-steel marquee with similar lettering. In the 1950s the Cal-Art Company began manufacturing plastic flowers and fruits which are now their primary products, although paper flowers are still produced on a smaller scale.

RICHMOND STREET

222 Little Nemo Manufacturing Company (1928): Fi Building on Ship Street, the Little Nemo Manufacturing Company built a new factory in the mixed-use, residential, commercial, and industrial area on the southern outskirts of thejewelry district. The Nemo Building is a 3-story reinforcedconcrete structure with a glass curtain wall which is roundedon the corner of Richmond and Ship Streets, a flat roof, acentral parapet with Art-Deco detailing, and simpler cornerparapets. Modern windows have been installed and the original marquee has been removed. The Little Nemo Manufacturing Company occupied the structure until the late 1970s. TheNemo Building is partially occupied.

SHIP STREET

70'" Doran-Speidel Building (1912): Monk and Johnson, architect. Built by James Doran and Sons (see 150 Chestnut Street) as an investment property, this 5-story structure has a concrete pier-and-spandrel exterior wall with large rectangular windows, and a decorated parapet. The interior mushroom columns are similar to those in the A. T. Wall Building (see 162 Clifford Street). The 5-story addition on Bassett Street was built in 1965. One of the tenants of this jewelry factory was the Speidel Chain Company, run by German immigrant Albert Speidel. The Speidel Chain Company manufactured gold watch chains for several years before and after World War I. During the post-World War I era, however, changing fashions and social customs fostered the development of casual, moderately priced watches-such as the expandable bracelet watch designed by Speidel's brother Edwin in 1930. This bracelet was manufactured by Automatic Chain Company (the successor to the Speidel Chain Company) until 1935 when Edwin Speidel formed his own company, the Speidel Corporation.

In 1951, Edwin Speidel set aside part of the factory, by that time owned by the Speidel Corporation, for the manufacture of Desitin ointment. The Desitin Chemical Company occupied part of the Speidel factory until 1963. In 1965, Textron Inc. bought the Speidel Corporation and continued the manufacture of watch bracelets at the Ship Street factory.

SOUTH MAIN STREET

213* Fall River Iron Works (1848): The Fall River Iron orks which manufactured iron nails was founded in FallRiver in 1822. In 1845, however, the iron company boughtthis Providence waterfront lot from Thomas Halsey and soonafter built a warehouse and office building. This handsome,31/2-story, brick, Greek Revival building has an end-gable roof and a granite storefront. The Fall River Iron Works owned and occupied the building until 1881, then the Fall River & Providence Steamboat Company took title to the warehouse and office building. The next business to own and occupy this structure was the well known Rumford Chemical Works. Named for Count Rumford, an 18th-century scientist who founded a professorship at Harvard, this company was founded by a former chairman of the Harvard Science Department, Eben N. Horsford, who devoted his life to the study of nutrition, especially the chemical process involved inthe conversions of grains into breads. The products of the Rumford Chemical Works manufactured in East Providence included Horsford's Cream of Tartar Substitute, bread preparation, baking powder, Rumford Yeast Powder, and Horsford's Acid Phosphate. The Rumford Chemical Works (which continues to manufacture Rumford Baking Soda but is no longer located in East Providence) used this structure for their main office; labeling departments; packing, shipping, advertising departments; and research laboratories until 1927 when the chemical company sold this building to the Phillips Lead Company, a plumbing-supply company. Owned and occupied by the Phillips Lead Company until 1973 this warehouse wasre habilitated by the Rhode Island School of Design for use by its architecture department.

521* Providence Steam Engine Company (1845 and later): The Providence Steam Engine Company is said to have had its start as early as 1821 when John Babcock, an early steamboat builder, worked on or near this waterfront site. In 1830 Babcock's son, John Babcock, Jr., and E. L. Thurston combined their mechanical expertise to establish a steam engine company. Soon afterwards, when the inventor Noble Greene joined the company, the name was changed to Thurston, Greene, & Company. In 1841, Thurston, Greene, &Company bought the patent rights to the Sickle Cut-off Valve. Seven years later when Corliss introduced his stationary steam engine with an automatic regulator, Thurston, Greene, &Company sued Corliss for infringement on the Sickle Patent but lost the case after many years of litigation.

An 1845 fire destroyed the complex, but it was immediately rebuilt. A 2-story, stuccoed-stone, gable-roofed structure with chamfered-beam and joist framing survives from the 1845rebuilding. Other structures in the complex date from 1892 to1894, though these later buildings might incorporate parts of the complex built between 1863 and 1864. These 1890s structures include a 3-story pattern and erecting shop with round arch fenestration on the east of the complex; a 3-story, brick, engine house with a gently sloping gable roof on the south; and a 3-story machine shop with a slightly pitched roof on the west of the complex.

In 1854, the company added a new partner, H. W. Gardiner, who ran the company for many years. In 1855 the firm introduced the Improved Greene Engine featuring the automatic valve gear. This engine was noted for its efficient speed control, durability, and stability. During the Civil War, the company produced the engines for two sloops of war, the Algonquin and the Contoocook.

In order to produce the capital needed for expansion during the booming war years, the business incorporated in 1863 as the Providence Steam Engine Company. By 1865 the works had tripled in size. While in the 1870s the company continued to manufacture the Improved Greene Engine, a new product-a steam-riveting machine-was added to the company's line; this machine held plates of iron together while forming the head of the rivet. Another product was the Burdict Nut and Bolt Machine. In 1874 the company completed a pumping engine for the Hope Reservoir which could pump as much as 2,000,000 gallons of water in a twenty-four hour period. This engine was praised for its unique and efficient regulating mechanisms. In the late 1890s, the Providence Steam Engine Company, which employed 300 workers by this time, merged with the Rice and Sargent Engine Company. The new company, called the Providence Engineering Works, produced both the Rice and Sargent Engines and the Improved Greene Engine as well as designing and manufacturing general machinery. In 1908 the works manufactured the running gear for the Maxwell Motor Car and a few years later began constructing engines for other automobiles as well. The Providence Engineering Works was liquidated in 1955, and the complex was bought by the New England Butt Company (see 304 Pearl Street), a division of the Wanskuck Company, which today manufactures braiders, wire stranding, and cable machinery.

614 Hicks Boiler Works (1870):** Hicks Boiler Works was founded in 1861 by Gideon Hicks who had previously worked nearby at the Providence Steam Engine Company plant. Hicks' company specialized in the manufacture of stationary and marine boiler works. The first buildings on the site were frame structures, which were superseded by the 21/z-story,brick building constructed in 1870. This structure has a mansard-roof and a large central doorway surmounted by an entablature supported on consoles. By the late 1870s Hicks Boiler Works employed thirty people and was equipped with three large lathes, a planer, two upright drills, and two power punches. Although the boiler works was never greatly expanded, the Hicks family maintained its steady business until1920 when the business finally changed hands. The new business, known as the Rhode Island Boiler Works, built and repaired boilers as well as smokestacks, flues, and dye vats. The company also specialized in sheet-metal work and welding. During the Depression the business again changed hands. The next to occupy the shop was the Narragansett Boiler Works, which operated here until the mid-1970s. The building is now vacant.

SOUTH WATER STREET

160 Oakdale Manufacturing Company (c. 1854, 1895):** The Oakdale Manufacturing Company, formed in 1891 by the merger of three Providence dairy companies, bought the William Butler warehouse and refitted it for the manufacture of "butterine." In 1894, Oakdale bought the lot just south of the former warehouse and constructed a 6-storybrick and granite structure, while adding two stories to the older building. As completed (from plans by engineer-architect George Leach), the two buildings formed a handsome, unified block.

By 1901 the Oakdale Manufacturing Company, which employed over 200 workers and produced 100,000 pounds of margarine daily, was one of the largest margarine companies in the United States. The margarine industry, however, threatened the dairy industry, which lobbied to have the color additive used with margarine taxed. This tax was eventually the downfall of the Oakdale Manufacturing Company which wasforced to close in 1916.

Next to occupy the structure was the Mason Manufacturing Company, run by E. H. Mason. This company, which manufactured cans, occupied these structures until 1931 when it moved to East Providence.

In 1939, Roitman's Furniture Company bought the factory for its present use as a furniture store and warehouse.

STEWART STREET

107 American Electrical Works (1890): The American Electrical Works, founded by Eugene Phillips in 1870 for the manufacture of insulated electrical wires, grew so rapidly that in the space of forty years the company occupied four different factories, each larger than the last. The third factory occupied by the company, this 4-story, brick and granite structure which occupies a square block, was built in 1890. Unusually handsome with its bands of windows unified by granite beltcourses, this factory still maintains much of its architectural value even though it has had much of its cornice removed and modern window sash installed.

When the company moved into this building in 1892, itemployed 325 workers. Electrical wire was in such great demand by rapidly expanding telephone, lighting, and electric trolley companies that by 1894 the American Electrical Company had outgrown its Stewart Street plant and built a large new complex in East Providence. For many years afterwards, however, the Stewart Street factory was known as the Electric Building.

Next to occupy this building was the Joslin Manufacturing Company, a shoelace manufacturer which remained only a few years before moving to the Elmwood Mills on Daboll Street in the mid-1890s. After the Joslin Manufacturing Company, the Atlantic Manufacturing Company, which manufactured flexible gas tubing in an adjacent structure, used the Electric Building for additional factory and storage space. Perhaps not able to utilize much of the large amount of space available in the factory, the Atlantic

Manufacturing Company sold the Electric Building to a realty company in 1902. Various companies-including wire, tubing, tea, and shoelace manufacturers-leased the building from 1902 to 1918 when the Fulford Manufacturing Company-manufacturers of brass and steel beds, metal ornaments, and stampings-bought the factory. It occupied part of the structure and leased the rest of the building to other industries and businesses. Fulford still remains at this site.

SUMMER STREET

109-111 J. P. Haskins Building (1888):** Built by J. P. Haskins, a "box manufacturer whose factory was located nearby, the J. P.Haskins Building is a handsomely detailed 4-story brick factory with a corbeled cornice and window hoodmolds. The first occupant of the structure, the Burdon Seamless Filled Wire Company, founded by Levi Burdon, was the first company to manufacture seamless gold- and silver-plated tubing used by jewelry manufacturers. By 1892, the company was producing 5,000 ounces per day of tubing and wire which was in demand by the growing jewelry industry. In 1896 the company, which had expanded its product to plate stock of all kinds in addition to wire and tubing, changed the name of the firm to Burdon Wire and Supply Company. In 1902, it merged with a Pawtucket company to form the United Wire and Supply Company which operated until 1918.

Since 1918 the Burdon building has been occupied by several varied industries.

VALLEY STREET

50-54 Providence Dyeing, Bleaching and Calendering Company (c. 1843 and later): The Providence Dyeing, Bleaching and Calendering Company was founded in 1814 as the Patent Calender Company when Henry Hoppin, Hercules Whitney, Edward Mason, Jr., and Daniel Bates bought the third steam engine to be used by the textile industry in Rhode Island. This early steam engine, called the Columbian Steam Engine, was unique for its ability to develop twenty horsepower; the Patent Calender Company was the first company to use a steam engine for finishing cloth (previous uses of a steam engine in Rhode Island had been in the Wilkinson Mill, 1810-1811, in Pawtucket, which was a cotton-spinning mill, and the Providence Woolen Company, 1812, in Providence which was a wool-spinning-and-weaving mill). The founders of the Patent Calender Company also bought the patent rights to the first calender (a machine which presses cloth between rollers or plates in order to give the cloth a smooth, glossy, or glazed finish) ever to use differential gears.

Equipped with this valuable machinery, the Patent Calender Company (controlled mainly by the Hoppin and Dyer families) built a plant on the corner of Mathewson and Sabin Streets and for twenty-nine years centered its cloth-finishing business there. In 1843, the Patent Calender Company was incorporated as the Providence Dyeing, Bleaching and Calendering Company with 192 shares and capitalized at $192,000.

At this time, under the leadership of William C. Snow, thecompany bought land in Olneyville and converted an old gristmill (later replaced by a brick factory) into a bleachery. Between 1846 and 1857 the Valley leachery had expanded to several buildings, as did the main plant on Sabin Street. The Sabin Street plant became especially well known for finishing jaconets, a lightweight cotton cloth with a semi-glaze finish.

In 1872 upon William Snow's death, Stephen Cornell, who had been a superintendent, was elected an agent; later, in 1883, Cornell was elected president of the company. He immediately closed the large Sabin Street complex (now demolished), and the finishing operations, except for the dyeing process which was abandoned, were moved to the Valley Bleachery.

The plant on Valley Street continued to grow into the 20th century under the direction, first, of William O. Cornell and, later, of J. P. Farnsworth. Production jumped from four tons of goods finished in a week in 1885 to twenty tons or 100,000 yards of light dress goods in 1901.

In 1952, the company, which still employed over 300 workers, sold the plant to the Jali Realty run by the Licht family. Jali Realty subdivided the plant, removed the machinery, extensively renovated the building, and within a year sold and rented various buildings and floors of this large plant to smaller industries, including various costume-jewelry companies, plating companies, and tool manufacturers. The large plant is now occupied by approximately nineteen separate businesses.

166 National and Providence Worsted Mills (c. 1887): This large complex of six, similar, 4-story, brick, pier-and spandrel mills with slightly pitched roofs was built after the original mill, erected by Charles Fletcher in 1867, burned in1885. The square 11/2-story, brick, mansard-roofed office had granite lintels over rectangular windows, a deep corbeled cornice and rows of closely spaced hip-roofed dormers. Charles Fletcher, an Englishman who had acquired his knowledge of worsted production in the famous worsted mills of Bradford, England, built the Providence Worsted Mill as a spinning mill to produce worsted mohair and genappe yarns, but upon rebuilding the complex in the 1880s, Fletcher added the National Worsted Mill, a worsted-weaving mill which he initially operated as a separate entity from the Providence Worsted Mill. The National Worsted Mill produced material for suits, over-coats, and cloaks. The power for the mills was produced by eight Corliss steam engines and, to a lesser extent, by waterpower. When Fletcher incorporated the two operations as the National and Providence Worsted Mills in 1893, the mill complex covered ten acres or two city blocks. At this time the company employed 750 workers and produced 900,000 yards of worsted goods yearly. Six years later Fletcher sold the National and Providence Worsted Mills to the American Woolen Company, a large wool-and-worsted combine of which he, with William Wood of Lawrence, Massachusetts, had been the co-founder. The American Woolen Company, which had also bought the Weybosset, Manton, Valley, and Riverside Mills, began selling its numerous Rhode Island and Massachusetts mills in the 1920s and continued to liquidate its holdings as profits continued to decrease in the 1930s, 1940s, and 1950sIn the mid-195os the American Woolen Company, which was soon absorbed by Textron, sold the National and Providence Worsted Mills. This complex is now occupied by several small industries and businesses.

325 Woonasquatucket Print Works (c. 1895): The Woonasquatucket Print Works was founded by G. M. Richmond and Victor Carr in the 1840s. By 1849, the print works,which specialized in calico printing, occupied six buildings, employed 250 men and 30 women, and produced 10,900,000 yards of printed goods yearly.

By 1857 the print works had grown considerably. At leastfour of the existing buildings were enlarged and four buildings were added. Production of calicoes and fancy print goods involved numerous processes, and by 1862 there were twelve buildings including machine and boiler rooms, an engine room, a bleach house, several dye houses, a block shop, a stenting (stretching) room, a dry house, a guarancene (sizing)house, two storehouses, a mangle (ironing) room, and an engraving shop. By the early 1860s Victor Carr had left the business which in 1865 incorporated as the Richmond Manufacturing Company. Frank E. Richmond remained president, and his son G. H. Richmond became treasurer.

In 1892 the Queen Dyeing Company bought the plant andremodeled the buildings at this time into the present complexof 2- and 3- and 4-story, brick, flat-roofed mill buildings with large segmental-arch windows. The original complex includedmany buildings of wood and stone.

The Queen Dyeing Company, incorporated in 1895, was led by William Penn Mather who had been involved in the machine industry in Manchester, England. The company specialized in a dye called analine-black which was used primarily for women's petticoats. The company employed 300 people and produced 100,000 yards of analine-black cloth daily. In 1909, the Queen Dyeing Company was bought by the U.S. Finishing Company which also owned the Silver Spring Bleaching and Dyeing Company (see 387 Charles Street) and the Dunnel Manufacturing Company in Pawtucket as well as five other dyeing and finishing plants in various parts of the country.

During the first World War, the Queen Dyeing Company urned out several million yards of khaki cloth a month. By the1920s, however, the demand for vast amounts of eitheranaline-black or khaki cloth decreased considerably and theQueen Dyeing Company turned to printing and finishing cloth. The company produced fancy printed cloth often used for women's pajamas; finished lower quality rayon and cotton cloth; and bleached, dyed, or finished fine fabrics for dresses and shirts. The Queen Dyeing Company division of the U.S. Finishing Company employed 350 people at this time.

In 1952, U.S. Finishing merged with a Baltimore drapery company and sold the Providence plant to a realty firm which rented it to various jewelry manufacturers and other industries until the Uncas Manufacturing Company, a large jewelry manufacturer, bought the property in 1977.

WATERMAN STREET

331 The American Emery Wheel Works (1898, 1909): Knight C. Richmond, architect. The American Emery Wheel Works was established in Boston and moved to this long 3story, brick, flat-roofed, factory building with segmental-arch windows immediately after its completion in 1898. The company, headed by mechanical engineer H. A. Richmond, manufactured a full complement of emery wheels and stones. These grinding wheels and stones were used by many of the manufacturing concerns in the city, and this was the only Providence-based firm of its kind.

The factory had a separate engine room which contained a sixteen-horsepower gasoline engine. The engine was installed by Fairbanks Morse Company of Beloit, Wisconsin, and was the only one of its kind in Providence at that time. The works also used conventional steam engines and generators for power production. The first floor of the factory was used for mixing, molding, and firing the wheels; the second floor was used for finishing the wheels, a process which required the use of black diamonds. The whole process of manufacturing wheels was accomplished in two days by a crew of sixteen workers.

In 1909 the company expanded and commissioned Knight C. Richmond to build an addition to the factory. The American Fmerv Wheel Works continued to manufacture grinding vdheels, tones, and emery cloth in this factory until 1978.

WEST RIVER STREET

146 Corliss Steam Engine Company (c.1875): George H. Corliss, a native of New York State, moved to Providence in1844. An inventor and engineer, Corliss devoted his energy to discovering ways of improving the steam engine. Originally, the modest works of the Corliss Engine Company were located on India Street, but by 1849 the stationary steam engines produced by Corliss, with its patented, automatic, cut-off valve, were in such demand that a new large plant designed by Corliss was built at Charles and West River Streets. Seven years later the Corliss Steam Engine Company incorporated. The company continued to expand as Corliss made more innovative changes to steam-engine design. Corliss was awarded several medals and honors including a gold medal at the 1867Paris Exposition. In 1876, Corliss built the vertical "Centennial Engine" to power the 1876 Centennial Exposition in Philadelphia.

By the late 19th century, the Corliss plant had grown into a large complex of nine 1-, 2-, 3- and 4-story, hip-roofed, brick structures, many of which featured pier-and-panel wall construction. These structures contained an iron foundry, a forge shop, a boiler shop, an erecting shop, a pattern shop, a ware shop, two machine shops, and offices. All of the remaining structures-including the 1870s iron foundry, with a double monitor hip roof, and parts of the 1-story machine shop road travelers on the Providence-Boston line. After George Corliss died in 1888, the company was run by William Cowen, William Sherman, and Charles Giles until 1896 when the business failed. Three years later the company was ought by the International Power Company-IPC-(this company also bought the Rhode Island Locomotive Works on Hemlock Street) which continued to manufacture Corliss engines as well as Greene Wheelock engines (formerly manufactured at Worcester) at the West River Street plant. This company was probably responsible for the large, 20th-century, brick-pier structure (now heavily altered) on the site. Today the remaining structures of the complex are occupied by a textile-machine repair shop and a granite-cutting company.

14 Providence Tool Company (1861): The Providence Tool Company was founded in 1845 and incorporated in 1847. Beginning as a small business located on Wickenden Street, it employed 40 workers in the production of heavy hardware and railroad supplies. Later the company began manufacturing sewing machines and muskets. In 1861, having outgrown its original plant, Providence Tool expanded into new quarters on West River Street while maintaining the Wickenden Street factory for the production of sewing machines. The 1861 factory on West River Street, a 2-story brick-pier structure with a handsome, 4-story, Italianate tower, has been altered by the removal of the original gable roof. The 3-story brick structure on the west side of the mill is a later addition.

Frederick Howe, one of Providence's well known inventors and engineers, was greatly responsible for the growth of the Providence Tool Company. Howe designed the Howe Miller, the prototype for the Brown and Sharpe Universal Miller. The Universal Miller was the result of a collaborative effort by Joseph Brown and Frederick Howe and was extremely important for the Providence Tool Company's production of rifles during the Civil War. In 1868, Howe joined the Brown and Sharpe Manufacturing Company.

Providence Tool bought the patent for the Peabody Martini Breech Loading Rifle in 1865; these weapons were manufactured and sold to the Turkish government during the Turko-Russian War. By 1878 the flourishing factory employed 1,500 workers at the Wickenden Street plant. In 1883, this large company was reorganized into two separate entities: the Household Sewing Machine company, which remained at the Wickenden Street plant (demolished), and the Rhode Island Tool Company, at the West River Street plant. Rhode Island Tool, led by George H. Dart, ceased production of rifles and concentrated on the manufacture of machine bolts, tap bolts, cap screws, machinists wrenches, and turnbuckles. The company still manufactures special machine bolts and forgings.

WILD STREET

81* Steere Worsted Mill (1884): The Steere Worsted Mill was founded as a part of the Wanskuck Mills (see 725 Branch Avenue) under the direction of Henry J. Steere, who was also the co-founder of the Wanskuck Mills. The Steere Worsted Mill, built to manufacture worsted yarn, is a long, 3-story, brick,flat-roofed structure with a projecting central tower under a peaked roof, ornamented with copper cresting. The most interesting feature of this rather typical mill is the short tower with brick pilasters and bulls-eye windows. Attached to the main mill is a wool storehouse and dyehouse. The Steere Mill made its first shipment of worsted yarn in 1884. By 1930, the mill contained 39 worsted cards, 28 combs, and more than 10,000 spindles. At this time the mill employed 395 workers. The Steere Mill was closed in the 1950s, when the Wanskuck Company sold all of its textile mills; it is now occupied by a luggage manufacturer.

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STEEPLE STREET

3 Congdon & Carpenter Company Building (c.1793): By 1790, Joseph Congdon was offering “lately come to hand, and now for sale, A Quantity of Iron-Stock, for the Use of Forges, amongst which is a large Proportion suitable for Blacksmiths' Business.” A considerable market awaited, for in addition to a steady demand for tools, firearms, maritime instruments, and farming implements made of iron, the incipient industries of Providence, Pawtucket, and the hinterland increasingly required Congdon's wares. His move to this 3-story, hip-roof, brick structure in 1793 implies early success and expansion. The 5 tons of imported iron bars that formedthe usual stock were stored in a small warehous bands; and calking steel. Hurried orders to organize and equip an army placed heavy demands on textile and machine manufacturers, who in turn relied on Congdon & Carpenter to supply their needs. By the end of the Civil War, the company's activities required more space, and Congdon & Carpenter moved one block north to a new structure at the corner of Canal and Elizabeth Streets, since demolished. The company moved to 405 Promenade Street (q.v.) in 1930. This structure is the oldest industrial building in the city and, after Pawtucket's Slater Mill, the oldest in the state.

PROMENADE STREET

405 Congdon and Carpenter (1930): Jenks and Ballou were the consulting engineers for this Art Deco structure built by Charles B. McGuire. Comprising a 1-story flat-roof office block in front of a large, flat-roof production-block, the reinforced-concrete structure has regularly spaced sash windows in the office and casement windows in the warehouse. Founded in 1792, Congdon and Carpenter operated its metal works in two locations on Canal Street (see 3 Steeple Street) before moving to this location.

GLOSSARY

Alpaca: A kind of llama; a fine yarn spun from alpaca wool; a thin cloth woven with alpaca yarn or a mixture of alpaca and cotton yarns.
Arkwright System: The first successful water-powered machines for spinning cotton; invented in England by Richard Arkwright in 1769 and later improved by Jedediah Strutt.
Astrakhan: A type of Russian lamb's fur; a lustrous woolen cloth with a curled or looped pile to imitate astrakhan fur.
Bobbin: A cylinder on which roving or yarn is wound in machinery for spinning or weaving.
Calender: A textile-finishing machine used in the cotton industry which produced a smooth, glossy finish.
Carding: The process of disentangling wool or cotton fibers.
Carding Machine: A machine consisting of cylinders with intermeshing wire teeth; the cylinders revolved at various speeds and in different directions to disentangle wool or cotton fibers.
Cassimere: A woolen cloth woven into intricate patterns usually on Crompton looms. Cassimeres were made from a moderately priced, medium-fine woolen yarn.
Casting: The process of shaping material in a mold; in making metal objects, the pouring of molten metal into a mold.
Cast Iron: A high-carbon-iron alloy. Cast iron was ideal for making machine parts and was also used for building facades, structural building components, bridges, and stoves as well as countless other products.
Comb: The implement, necessary to the manufacture of worsted yarn, which separates the long wool fiber from the shorter fiber and arranges the fibers in a parallel order. The Lister comb (1851) was the first sophisticated automatic comb. The Noble comb (1853), a more efficient combing machine, superseded the Lister comb by the 1860s and 1870s.
Combine: The result of a combination of several companies of the same type.
Conglomerate: A large corporate structure comprised of numerous diversified companies.
Delaine: From the French, *Mousseline-de-laine* (a muslin made from wool). Although originally an all-wool product, delaine fabrics which were manufactured in England and the United States were a cotton warp with a cheap woolen or worsted weft. Delaine cloth, which was usually dyed or printed, was extremely popular for moderately priced dress material because of its durability, pleasing texture, and bright finish. Delaines were among the earliest, mass-produced, worsted goods.
Dobby: A loom attachment for weaving intricate patterns.
Drawing: The process in which cotton or woolen strands or rovings are passed through a series of successively faster rollers which straightens the fibers and attenuates the strand of roving.
Dressing: Refers to the processes of fulling, napping, shearing, and pressing in the manufacture of woolen cloth.
Feeders: Used in both cotton- and woolen-yarn manufacturing. In both cases these machines automatically transferred the fiber from one machine to another. The Bolette Card feeder (1864) was an innovative feeder which automatically transferred loose wool from one carding machine to the next.
Findings: Pin stems, backings, and assorted hardware used in the manufacture of jewelry.
Fly Frame: A type of roving machine used for making fine cotton yarns.
Forging: A metal part formed by pressure, with or without heat.
Foundry: The structure in which iron, bronze, or other metal is melted and poured into a mold.
Fulling: The process which followed the weaving operation in woolen cloth manufacturing. During the fulling operation the woolen cloth was washed, shrunk, and felted (matting the fiber together by means of heat, moisture, friction, and pressure).
Gasometer: A building which housed a gas-storage tank.
Integration: The production of cloth from raw wool or cotton to finished cloth at one factory site.
Jack Frame: This machine accomplished the same purpose as a roving frame, but was used in the production of finer yarns.
Loom: The apparatus used in the weaving process.
Merino: The fine wool from merino sheep used both for fine woolen and worsted manufacture.
Milling Machine: A machine with rotary cutters used to shape metal parts.
Molder: A person who makes foundry molds.
Napping: The raising of fibers from woolen cloth by means of teasel gigs. This process usually followed the fulling operation.
Picker: A picking machine; a person who runs a picking machine or manually performs the picking process.
Picking: Cotton - the process of cleaning the cotton by beating sand, heavy dirt, and seeds from the fibers. Wool - the process of beating and forcing air through the wool to eliminate dirt and straw from the fibers.
Precipitation: A method of sewage treatment involving the separation of solids, liquids, and gases from the sewage.
Printing: The process of transferring a pattern to cloth by means of engraved copper cylinders (one cylinder for each color in the design) placed in a printing machine through which the cloth passes.
Rayon: A synthetic fiber used to make yarn and cloth similar to silk or cotton. Rayon was one of the earliest synthetic fibers.
Roving: The process of twisting the strand of cotton or wool prior to the spinning process.
Roving Frame: The apparatus on which the drawing and roving operations are carried out.
Scouring: The removal of the wool grease, suint, and dirt from the wool fibers by immersing the wool in troughs filled with a chemical solution; this process usually followed the picking process.
Shearing: The process of evening the fibers of woolen cloth raised by the napping process.
Spinning: The final process in the production of yarn in which the roving is drawn out and twisted into yarn. The spinning machine used in the Arkwright System was a flyer frame (also called a water frame). This machine produced stronger yarn than the earlier spinning jenny. The flyer frame was replaced by the cap spinning frame (also called a Danforth frame) and by the ring spinning frame which was the most popular type of cotton spinning machine in America by the late nineteenth century. The spinning mule which combined the features of two earlier spinning machines was widely used for spinning fine cotton yarn and for spinning wool by the late nineteenth century.
Stamping: In jewelry manufacturing, brass, copper, or steel is pressed between a die and a mold to produce a small detailed finding which is often the major component of the piece of jewelry.
Studs: A type of button with a shank on the back which was inserted through an eyelet in a garment; studs were used both for fastening and ornament.
Teasel Cross Gig: An innovative machine used in the napping process. Early teasels were the dried, spiny flowers of the teasel plant attached to a frame which were used to raise the nap of woolen cloth. Later teasels were made of metal and were attached to a machine called a gig.
Tenter: A frame with hooks (tenterhooks) along two sides which was used for stretching, evening, and drying woven cloth after it had undergone the dyeing, cleaning, or shrinking processes.
Tenter Room: A room or building in which the cloth is tentered.
Warp: The threads extended lengthwise in the loom harnesses according to the desired design. Warp yarns must have a tighter twist than weft yarns because they are subjected to a greater strain in the weaving operation.
Weft: The yarns carried across the warp with a shuttle; also called filling yarns.
Witch: A loom attachment like a dobby for weaving intricate patterns.
Worsted: Describing a kind of woolen yarn made from parallel strands of long-fibered wool. Cloth woven with worsted yarn usually has a smooth texture and a sheen. Worsted fabrics such as serge are still used for quality men and women's suits and coats. Types of worsted yarn include Saxony, Shetland, and zephyr.

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Fig. 71: Manufacturers Building (1892, demolished 1968); formerly at 101 Sabin St. Courtesy of the Rhode Island Historical Society: RHi x3 2836.

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